

INSIDE DOPE

Learn to live and laugh—
Thus delay your epitaph

By GEORGE
F. TAUBENECK

Story of the Week
Add Russian Stories
Gags of the Week
Slogan of the Week
Quotes of the Week
How To Get Mail
Fun In Arizona
Help for Businessmen
Poetic Justice
It Could Happen to
Any of Us
Unknown Here
What's All the Commotion?
Thought for the Week
Economics for Everyone
Worthy Project

Story of the Week

Visiting clergyman was "entertained" by a kindergarten daughter while her mother primped.

"Do you say your prayers every night?" he unctioned.

"Mother says them for me. She sighs: 'Thank Heaven you're in bed!'"

Add Russian Stories

IVANOFFALITCH: "Next world war is easy win for us. All we do is put atom bombs in suitcases and explode in American cities."

PETRIFIEDVITCH: "Ve haffent got materials."

IVAN: "You know American spies gave us atom bomb."

PET: "So right you are, comrade. But where we get suitcases?"

Gags of the Week

"My reason for resigning," Mrs. Steno wrote the boss, "would soon be apparent. And so will I."

A low neckline is about the only thing men approve of and look down on at the same time.—*P. K. Sileiner*.

SADDEST MAN: He made a hole-in-one with no witnesses.

Antoine Schnerr Co., Ltd.
Honolulu, Hawaii

Editor:

A "slow" one, thought maybe you'd like.

Have you heard about the toothless termite that rambled into the local grog shop and asked, "Say, bud, where's the bar tender?"

GEORGE P. HOWARD,
President

Slogan of the Week

"Work and save and some day you'll have enough to divide with those who don't."—*Fifth Wheel*.

Quotes of the Week

Living in a bookshop is like living in a warehouse of explosives. Those shelves are ranked with the most furious combustibles in the world, the brains of men.—CHRISTOPHER MORLEY.

Lord! when you sell a man a book you don't sell him just 12 ounces of paper and ink and glue—you sell him a whole new life.... There's all heaven and earth in a book, a real book I mean.—*Parnassus on Wheels*.

Long ago I fell back on books as the only permanent consolers. They are the one stainless and unimpeachable achievement of the human race.—CHRISTOPHER MORLEY.

How To Get Mail

As publisher of the News your humble correspondent receives (Concluded on Page 6, Col. 1)

621.5
A631037 E-33

ISSUED EVERY MONDAY AT 450 W. FORT ST., DETROIT 26, MICHIGAN. ESTABLISHED 1926.

AIR CONDITIONING & REFRIGERATION News

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Lower Prices Reflect Excise Tax Reductions

(See Tabulation of New Prices on Page 57)

WASHINGTON, D. C.—A flurry of downward price adjustments has followed the recent reduction of the manufacturers' excise tax on appliances from 10% to 5%. However, it is difficult to tell from company statements just how much represents the excise cut and how much a general realignment of prices.

Where one company reduced a refrigerator carrying a suggested list price of \$279.95 to \$268.23, another reduced a box of the same price to \$269.50 and a third to \$259.95.

In some cases, higher priced appliances were reduced less than appliances carrying a lower tag. Cuts have ranged from nothing at all to \$60. Generally the range in appliances selling from \$200 to \$500 has been between \$10 and \$30.

Where no changes have been made in suggested list prices, manufacturers have explained that the excise cut has been reflected in a lower cost to distributors and dealers, giving them a larger margin.

At press time, it was still too early to say whether or not the excise cuts had stimulated sales appreciably. But both manufacturers and dealers lost no time in announcing the lower prices.

While there are still many questions about how the new tax cuts are to be applied, the Internal Revenue Service has clarified only one point. That concerns refunds on floor stocks of distributors and dealers.

According to the I.R.S., manufacturers will be required to make

Kelvinator Appoints Philipp and Mikulas To Engineering Posts

DETROIT—George W. Mason, chairman and president, Nash-Kelvinator Corp., has announced organization of a special research staff and important appliance engineering staff advancements, with Dr. Lawrence A. Philipp, vice president in charge of Kelvinator engineering, becoming vice president of appliance engineering and research.

Dr. William Mikulas has been appointed chief engineer. As head of the Kelvinator engineering department, he will be responsible for all current product engineering and all immediate product development engineering. He has been Kelvinator's assistant chief engineer for the last five years.

Dr. Philipp will head long-range product development and research. In addition, he will act as consultant on appliance engineering for Nash-Kelvinator, including all divisions and subsidiaries, here and abroad. This will also cover advisory work for Nash Motors in connection with its new automobile air conditioning system for both heating and cooling.

His consulting and research work will cover all appliance fields (Concluded on Back Page, Col. 4)

Canadian Tax Repealed

OTTAWA, Ont., Can.—Repeal of Canada's 15% special excise tax on many electrical appliances was announced on April 6 by Canadian finance minister Douglas Abbott. This was one of the few major changes made in Canada's 1954-55 budget, which is expected to save taxpayers about \$40,000,000 in the coming fiscal year.

Larger appliances affected include dishwashers, garbage disposers, dehumidifiers, and ironers.

refunds to their distributors and dealers before July 31.

When they make their own application to the government for excise refund, they must have available for inspection evidence showing the inventory of the taxable articles held by each dealer or distributor on April 1, the tax paid by the manufacturer on such in- (Concluded on Page 57, Col. 1)

'53 NEMA Freezer Sales Second Best Year on Record

(Chart on Page 59)

NEW YORK CITY—A dip in home freezer sales during last November and December kept 1953 from being the best sales year in history for the 25 freezer manufacturers reporting to the National Electrical Manufacturers Association.

Because these manufacturers sold only 36,695 freezers in December as compared with 60,301 in December, 1952, sales for the year totaled 794,688 units, just 2% under the 814,086 sold last year—the best freezer sales year to date.

The December sales figure was 39% under that for the same month of 1952 but was 23% better than November, 1953.

Of the 1953 total, 36% of the units sold were upright models and 64% were chest types.

The NEMA manufacturers sold 21,269 units to Canada and 9,790 to other foreign countries.

Utilities Ponder Return to Active Appliance Selling

CHICAGO—Hottest topic in the halls and suites at the Edgewater Beach hotel here, in conjunction with the 20th annual sales conference of the Edison Electric Institute April 5, 6, 7, and 8, was strong sentiment for the return of public utilities to retail appliance selling in a big way.

General feeling was that sound utility merchandising was needed to show the way for other dealers in terms of sales training, demonstrations, and doorbell ringing. Otherwise, many utility executives feel, the discount houses may run nearly everyone else out of the business.

Dan Packard, general sales manager of Kelvinator Div., Nash-Kelvinator Corp., presented a highly complete and imaginative package of Nema appliance promotional and educational programs for 1954 to the more than 700 EEI people present.

Included in these programs is a campaign to rid the nation of discarded refrigerators which are potentially dangerous to inquisitive children. This program will be (Concluded on Back Page, Col. 5)

Westinghouse Names Dehumidifier, Room Cooler Sales Chiefs

SPRINGFIELD, Mass.—H. F. Hildreth, manager of the refrigeration specialties group of the Westinghouse Electric Appliance Div., has announced a number of staff appointments for his group.

He named H. R. Bryant as manager of the room air conditioner department, E. P. Hartley as manager of the water cooler and dehumidifier department, and E. C. Watts as manager of the beverage cooler department.

Previously he had named Robert M. Fichter as sales manager and (Concluded on Page 4, Col. 4)

New Amana Plant Boosting Freezer, Conditioner Output

AMANA, Iowa, April 5—Completion of a \$3,500,000 expansion program, that more than doubles the size of its plant and triples its productive capacity, was announced today by Amana Refrigeration, Inc., manufacturer of home freezers and room air conditioners. The firm now can turn out 1,000 freezers a day.

"It is fitting that our new plant should be completed in 1954—the 100th anniversary of the founding of the Amana Colonies in Iowa, and the 20th anniversary of the start of our refrigeration business," reported George C. Foerstner, executive vice president.

"The Amana plant today is essentially a new factory, because more than 75% of its present equipment has been purchased and installed since the expansion project began a little more than a year ago," Foerstner said. "All other equipment in the plant was moved and re-arranged in order to set up the most efficient, straight-line manufacturing operation, capable of turning out top-quality products with maximum efficiency.

"The new plant, which we believe to be the largest freezer factory in the country, was designed (Concluded on Page 13, Col. 4)

ARI Marks Up Many Gains In Its First Year

Nearly 30 More Firms Join; Committees Go To Work on Air Conditioning Problems

WHITE SULPHUR SPRINGS, W. Va.—First regular annual meeting of the Air-Conditioning and Refrigeration Institute (ARI), formed a year ago through the merger of ACRMA and REMA, concluded here April 2 with the feeling general among those attending in agreement with Retiring President L. C. McKesson's assertion that the ARI is a "dynamic association, truly representative of the commercial refrigeration and air conditioning industry."

Membership has grown from 140 at the time of the formation of the new body a year ago, to 169 as of the present date, McKesson said, and he paid special tribute to the membership committee and its chairman, Joe Dugan, for this growth. The membership now represents 90% of the total manufactured goods in the industry, McKesson declared.

New officers in ARI who will hold office during the coming year are A. J. DeFino, Fedders-Quigan Corp., president; James Emmett, Jr., Jas. P. Marsh Corp., vice president; M. M. Lawler, Worthington Corp., treasurer. With McKesson and George S. Jones, Jr., managing director, they will constitute the executive committee of the association.

Perhaps the most newsworthy of the many actions taken at the ARI meeting was that of the Room Air Conditioner Section (which had nearly 100% attendance of its some 40 members) in taking steps (Concluded on Back Page, Col. 1)

Kay Heads Frigidaire Sales Planning As Gilbert Retires

DAYTON—Announcement of the retirement of Ellsworth Gilbert, Frigidaire's manager of appliance sales planning, after 25 years of service with the company, has been made by H. F. Lehman, general sales manager.

He will be succeeded by J. K. Kay, assistant manager of appliance sales planning, Lehman said. The new appointment is effective immediately.

Gilbert became associated with Frigidaire in 1929. His first assignment with the company was with the sales training department. In 1932 he was named household zone manager and, in 1939, sales train- (Concluded on Page 4, Col. 1)

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Westinghouse Announces Key Appointments for New Air Conditioning Div. Staff at Staunton, Va.

HYDE PARK, Mass.—Key appointments to the staff of Westinghouse Electric Corp.'s new Air Conditioning Div. were announced here recently by John A. Gilbreath, division manager.

Many of those named held similar positions in the air conditioning department of the Westinghouse Sturtevant Div., which was recently set apart as a separate division of the company, and which will be headquartered at the new air conditioning plant now under construction at Staunton, Va.

Those named are: William B. Cott, sales manager; John L. Ditzler, engineering manager; Clifford M. Sayre, manager of manufacturing; Charles E. Smoyer, Jr., manager of accounting; Harold L. Goehring, industrial relations manager; and John C. Feick, Jr., purchasing agent.

Cott joined Westinghouse in 1941, and during World War II served as a lieutenant commander in the U. S. Navy Amphibious Force. In 1946 he rejoined Westinghouse as manager of syndicate sales for its Sturtevant Div.

He was named northeastern district manager of the air conditioning department of Sturtevant in March, 1950, and in December, 1952, was appointed air conditioning sales manager for the Sturtevant Div.

Ditzler came with Westinghouse on the graduate student course in 1933, and served as a design engineer from 1935 until 1943, when he was named a section engineer. In 1945 he was made engineering manager for the Sturtevant Div.'s air conditioning engineering department.

Sayre joined Westinghouse in 1922 in the production department of the company's East Springfield, Mass. plant.

In 1939, was placed in charge of production and stores as well. He left the company in 1940, and returned in 1947 as general works manager for the Sturtevant Div. He was named manager of manufacturing in 1949.

Smoyer came with Westinghouse on the graduate student course in 1937, and has held a number of positions in the accounting department.

He served in the Navy during World War II, and prior to his recent appointment, was budget accountant at the Westinghouse Standard Control Div. at Beaver, Pa.

Goehring has been with Westinghouse since 1941. Following the graduate student course, he held several industrial relations positions, and prior to his recent appointment was supervisor of industrial relations at the company's

Motor & Control Div. located at Buffalo.

Feick served 11 years with the Navy following his graduation from Annapolis, and joined Westinghouse in 1952.

The Air Conditioning Div. will be responsible for the development, manufacture, and sale of air conditioning and refrigeration equipment from 2 to 100-hp. capacities. This includes self-contained "Unitaire" units, combination cooling and heating units, heat pumps, compressors and accessories, and the home "Precipitron" electronic air cleaner.

Headquarters of the division will remain at Hyde Park until the Staunton plant is completed later this year.

Cleveland ASRE Chapter To Hear Pataky Apr. 20

CLEVELAND — Henry R. Pataky, general sales manager of Lima Register Div., Lennox Furnace Co., will discuss "Air Distribution in Residential Air Conditioning and Heating" at the April meeting of the Cleveland Chapter, American Society of Refrigerating Engineers.

The meeting will be held April 20 at the Cleveland Engineering Society starting at 8 p.m. and is open to all interested engineers. Preceding the meeting, there will be refreshments at 6 p.m. and dinner at 7 p.m., according to the announcement.

New ASHVE Guide Has Sunday Closing Law Passed By Royal Oak Commission

NEW YORK CITY—A new chapter on residential summer air conditioning is a special feature of the new 32nd edition of the *Heating, Ventilating, Air Conditioning Guide* published by the American Society of Heating and Ventilating Engineers.

Included are new data on methods of obtaining local relief in hot humid environments, new information on recent developments in air and gas cleaning, new tables on steam requirements of process equipment, and more detailed data on characteristics of pipe and tube.

Recent ASHVE research has been used as a basis for extending the data on the effect of shading of glass and for improving the rewritten chapter on air distribution.

The Technical Data Section has been enlarged to 1,128 pages, representing an increase of 32 pages over the previous edition. The Manufacturers Catalog Data Section of 486 pages, illustrates the products of 319 manufacturers.

An edge index is a new feature enabling users of the guide to open the book immediately to any desired chapter of text or any section of catalog data.

Recent research conducted by ASHVE, or sponsored at leading universities, has influenced changes, revisions and additions to a large proportion of the chapters.

Chapters brought up-to-date by major changes include, Heating Load, Fuels and Combustion, Chimneys and Draft Calculations, Panel Heating, Pipe, Fittings, Weldings, District Heating, Air Cleaning, Automatic Controls, Electric Heating, and Owning and Operating Costs.

The 52 chapters of the Guide are grouped in seven sections covering fundamentals, human reactions, heating and cooling loads, combustion and consumption of fuels, systems and equipment, special systems, and instruments and codes.

The 24 by 32-in. ASHVE psychrometric chart, printed in two colors, is included.

The Guide is 6 by 9 in. in size, bound in blue cloth cover, stamped in gold, and is similar in appearance to previous editions. Single copy price is \$10.

O'Brien Promotes Bader to Executive V. P., Gen. Mgr.

NEW YORK CITY—The S. J. O'Brien Sales Corp., Manhattan Frigidaire air conditioning dealer, has announced the promotion of Hyman Bader to executive vice president and general manager.

Bader started with the O'Brien organization in 1923. He became assistant treasurer in 1935 and treasurer in 1950. Early in 1953 he was elected to the board of directors.

ROYAL OAK, Mich.—The Royal Oak city commission has passed an ordinance, effective April 25, requiring furniture and appliance stores to remain closed on Sundays. Violators will be subject to fines of up to \$100 and/or 90 days in jail.

The adjoining city of Ferndale also enacted a Sunday closing ordinance for appliance and furniture stores this month. Both cities are northern suburbs of Detroit, which passed a similar law last year.

Mayor Howard Kelley of Royal Oak viewed the ordinance as a "starting point" from which he expects to eventually close all businesses on Sunday except for vital necessities.

The ordinance drew support from a local minister and from the Michigan Retailers Association, which pointed out that a limited number of stores staying open on Sunday forced others to do likewise to compete.

The ordinance was opposed by a local furniture manufacturer-retailer, who declared that he had established his business in Royal Oak only because he could remain open on Sunday. He threatened to leave the city if the ordinance passed.

Commissioner Louis Demute, who is also a real estate dealer, voted against the ordinance, because, he said, businessmen showed little or no interest in it. "In the absence of such interest," he declared, "we shouldn't take it on ourselves to pass this ordinance. If such a law is needed, it should be applied at the state level and not at the local level. I don't think this is right."

The ordinance states that it is now "unlawful to engage, within the city of Royal Oak, in selling, renting, leasing, or exchanging of furniture, including but not limited to television sets, radios, and household appliances, or to keep open any store, office, or other place for the purpose of selling, renting, leasing, or exchanging the same on the first day of the week commonly known as Sunday."

Replying to the furniture dealer's contention that many husbands and wives have only Sunday on which they can shop together for furniture and appliances, Commissioner Grant Maudlin pointed out that many stores are open several evenings a week until 9 p.m. He felt sure that any couple that really wanted to buy furniture or appliances could manage to get to the store during the week.

In Ferndale, Benjamin Appliance Co., which had advertised extensively the fact that it remains open on Sunday, opposed the ordinance as discriminatory. Meyer Leib, attorney for Benjamin, noted that gas stations and factories remain open on Sunday. "Are they essential?" he asked.

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Lipman
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Gentlemen: I am interested in selling Lipman Ice Tip Machines. Please send information.

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stores and offices—as well as the Westinghouse Heat Pump for modern all-electric living.

For details on these units, as well as Westinghouse air conditioning compressors and equipment for field-assembled systems, look in your Classified Telephone Book today for the name of your nearest Westinghouse Air Conditioning Distributor. Or write Air Conditioning Division, Westinghouse Electric Corporation, Hyde Park, Boston 36, Mass.

**WESTINGHOUSE
AIR CONDITIONING**

— YOU CAN BE SURE... IF IT'S

Westinghouse

J-80398

TERRITORIES
AVAILABLE!

**TV Quiz Show Offers
Hotpoint Refrigerators
As Top Jackpot Prize**

CHICAGO—Hotpoint Co. is giving dealer and distributor marketing areas an additional boost in TV advertising coverage by participating in a new quiz show, "On Your Account."

According to Gordon G. Hurt, advertising manager, Hotpoint will give away one combination refrigerator-freezer each week and the refrigerator will be featured as a top jackpot prize on the quiz show.

The half hour quiz show will be viewed through 127 NBC TV stations. The company chose the 4:30 (E.S.T.) time slot as the best medium for reaching late afternoon women viewers.

Distributors and dealers will be notified of area winners for presentation of the refrigerator, together with suitable publicity for local newspapers in the quiz winners-dealer area.

Hotpoint also nationally sponsors the Ozzie and Harriet radio and TV show through ABC network every Friday evening.

**Coffee Giveaway Draws
Prospects for Dealer**

BIRMINGHAM, Ala.—Offering the first 50 women prospects to attend a special merchandising event in the store a free can of coffee proved an attractive traffic magnet during March for J. A. McNeil, of McNeil-Moore, Inc., appliance retailer here.

The merchandising event was a 3-day "Circus" when McNeil decorated all of the appliances in the store with large stuffed toy animals, served free cookies and coffee to adults, while the parking lot outside was used as a cantering ground for shetland ponies, on which youngsters were invited to ride. Balloons were distributed to all visitors, and the appliance showroom was given a "circus atmosphere" with bright red-and-white striped canvas.

To encourage the parents of children to go ahead with appliance purchases, McNeil offered to provide each buyer with whatever stuffed animal appeared atop the appliance. Many of these were expensive stuffed toys ranging up to \$25 in value.

**Plan \$23,000 Cooling Job
For Georgia Courthouse**

MACON, Ga.—Bibb County Commissioners recently authorized preparation of detailed plans for the first stage of air conditioning in the county courthouse.

Subject to approval by the finance committee, the board authorized advertising for bids for cooling city court and both the record room and the office of the clerk of superior court.

Estimated cost of the initial venture was unofficially put at \$23,000.

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Speed-Freeze
PRODUCTS

BEVERAGE COOLERS AND
INSTANTANEOUS DRAFT
BEER COOLERS.
(With Refrigerated Faucets)

WRITE
IDEAL COOLER CORPORATION
2953 EASTON AVE. • ST. LOUIS 6, MO.

**Townsend Heads Appliance
Research for Avco Div.**

CINCINNATI—The appointment of Russell S. Townsend as manager of research and advanced development for appliances was announced recently by O. E. Norberg, director of appliance engineering for the Appliance and Electronics Div. of Avco Mfg. Corp.

From September, 1952, until this appointment, Townsend was assistant to the director of appliance engineering at the Admiral Corp. He was development engineer at Servel, Inc., from 1937 until 1948. And from 1948 until 1952 he attended Purdue university, during which time he did considerable graduate work in physics.

He is a member of the American Society of Refrigerating Engineers and is currently serving as vice chairman of the research exhibit committee of this society. He also

has been a member of the general engineering committee on refrigeration, air conditioning and dehumidifiers of the National Electrical Manufacturers Association.

**Pataky Buys Ohio Firm,
Keeps Lusch & Schill Name**

LONDON, Ohio—Adam J. Pataky, formerly with the Airtemp Div. of Chrysler Corp., has purchased the Lusch & Schill air conditioning and heating business here from Mrs. Lillian Spoerlein, he announced recently.

He will continue the business under its present name and will concentrate on residential air conditioning and heating sales, Pataky said. Pataky has been in the heating and air conditioning business for 25 years and is a member of the American Society of Refrigerating Engineers, the National Heating and Air Conditioning Association, and the Associated Heating Contractors Association.

**Gilligan Retires as Philco
Advertising Vice President**

PHILADELPHIA—John F. Gilligan, vice president in charge of advertising, Philco Corp., retired April 2 after 32 years of active service with the company.

Gilligan joined Philco in 1922 and has served in important positions in the sales, advertising, and order departments.

Gilligan was named advertising manager in 1944 and became a vice president of Philco Corp. in 1950. Previously he served the corporation as assistant general sales manager and directed the company's statistical and market research section. During World War II, he acted as manager of Philco's priorities division.

Morgan Greenwood, who was named general advertising manager for Philco last January, will supervise all of the company's advertising programs.

**Sunbeam To Test Market
3/4-Ton Room Cooler**

CHICAGO—Sunbeam Corp. will market test a $\frac{3}{4}$ -ton room air conditioner with heater and thermostat in Atlanta, it was reported here recently. The unit will be sold through appliance and housewares dealers and will carry a suggested list price of \$389.95, the report said. Gibson Refrigerator Co. is said to be making the unit for Sunbeam.

They'll Be Cool—and Protected

HOUSTON, Texas—Lest people in air conditioned offices with closed windows fail to hear the air raid siren, new warning systems consisting of bell-and-light combinations are being installed in major Houston office buildings.

Civil Defense Director Robert E. Smith had the first one installed in Houston's 34-story Gulf building, with 74 other buildings to receive similar protection.

**AVAILABLE IN
2 TON AND 3 TON
UNITS**

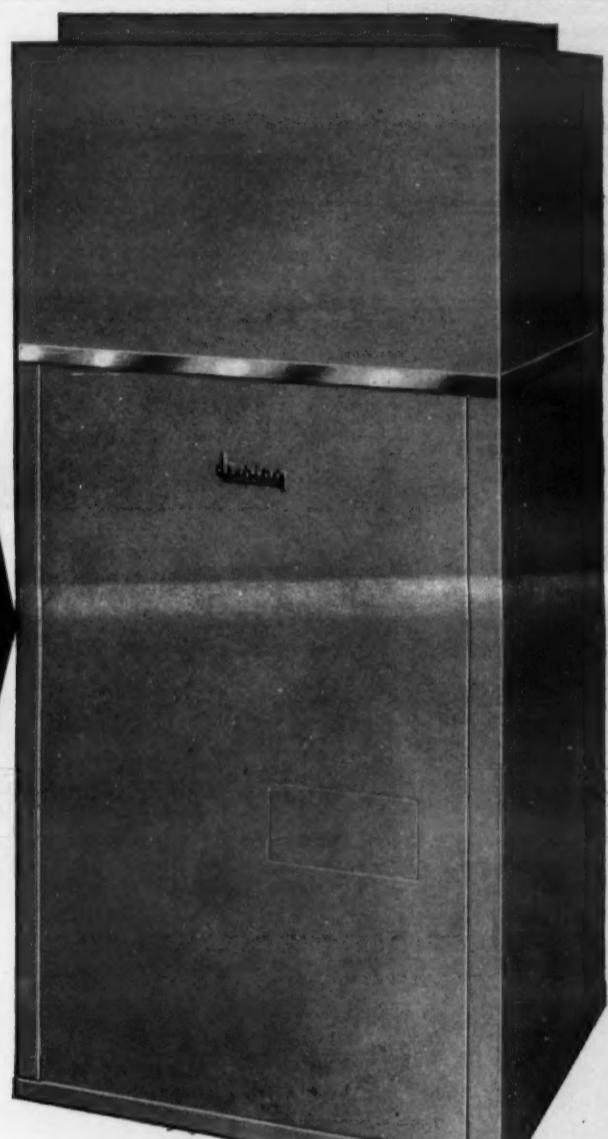
**The Highest
PROFIT
Most Versatile
Air Conditioners**

**WELDED HERMETIC UNIT
NO EXPANSION VALVE
NO FALL PUMP DOWN
SERVICE FREE REFRIG-
ERATION SYSTEM**

COMES IN THREE SECTIONS

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2. Blower section for furnaces without blowers or if by-pass is desired.
3. Plenum Chamber for direct discharge.

Adaptable as a complete self-contained Air Conditioner for stores, offices and shops. **Compact**—only 55 inches high. Requires only 20" x 20" of floor space. **Easily installed** as addition to present heating plant. **Efficient**—2 and 3 ton sizes cool 5 to 8 rooms. **Trouble-free**—precision engineered for perfect performance. **Beautiful**—swan gray.



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ELLSWORTH GILBERT



J. K. KAY

Frigidaire Names Kay --

(Concluded from Page 1, Col. 5) ing manager. Following the war, he served as sales promotion manager until May, 1952 when he was appointed manager of appliance sales planning. Gilbert is well-known in the business world for his contributions to "showmanship" in sales conventions.

Kay, his successor, is also a veteran with Frigidaire. He became associated with the company in 1937 when he joined the sales planning and sales promotion staff. He served three years with the armed forces during World War II, and was promoted to lieutenant colonel before returning to Frigidaire as manager of organized promotion. He was named assistant manager of appliance sales planning in July, 1952.

JUST ASK US!

Turn to "What's New" Page for useful information on new products.

Frigid, Inc. Introduces 4 Window-Type Coolers

BROOKLYN—A line of four window-type room air conditioners with all metal parts formed of galvanized steel, painted and baked twice to prevent corrosion and rust streaks, has been introduced by Frigid, Inc. here.

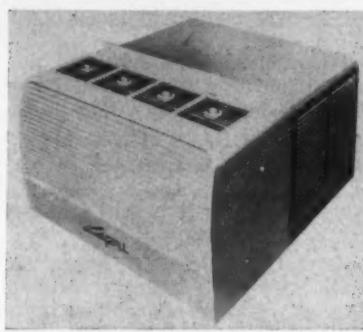
Called the "Capri" air conditioners, the line includes a $\frac{1}{2}$ -ton deluxe model at \$349.95, custom and standard $\frac{3}{4}$ -ton units at \$399.95 and \$339.95 respectively, and a 1-ton custom model at \$459.95.

The custom models are also equipped with a Chromolax heater with thermal protection to provide heating as well as cooling. The heater in the $\frac{3}{4}$ -ton model is rated at 1,500 watts and in the 1-ton unit at 1,750 watts.

The $\frac{1}{2}$ -ton model uses "Freon-12" as the refrigerant and the others use "Freon-22." All but the standard $\frac{3}{4}$ -ton provide for fresh air and exhaust control. The custom models feature two-speed fans.

All models are equipped with Tecumseh hermetically sealed compressors, 1-in. thick filters, large capacity condensate pan, and condenser fan with slinger ring. Finish is green gray. Louvers are individually adjustable to prevent drafts. The special "Frigidial" control is concealed beneath the cabinet lid.

The $\frac{3}{4}$ -ton models are available in either 115 volts or 230 volts.



"CAPRI" air conditioner introduced by Frigid, Inc.

Michigan RSES Plans Convention April 23-25

FLINT, Mich.—A wide variety of educational talks has been programmed for the fifth annual convention of the Michigan RSES state association to be held at the Durant hotel here April 23 to 25.

Topics to be covered at Saturday and Sunday morning sessions include hermetics, evaporative condensers and cooling towers, year-round air conditioning, removal of acids from systems, selling small replacement units, and operating a small business. In addition, an "Information Please" session has been scheduled.

Entertainment planned for the convention will feature an informal get-together party Friday evening, April 23, a luncheon, cocktail party, banquet, and floor show Saturday.

Westinghouse E. Springfield Appointments--

(Concluded from Page 1, Col. 4) H. R. Cummins as advertising manager.

In turn, Fichter appointed Hugh P. Lynch manager of sales training and Cummins appointed W. H. Knoerr advertising supervisor.

As merchandise manager and product supervisor, respectively, Bryant named W. Nelson Abbott and Raymond E. Mermet for room air conditioners; Hartley named Francis E. Moquin and Maurice J. Guiheen, Jr. for water coolers and dehumidifiers; and Watts named E. George Gordon and Allen S. Harrison for beverage coolers.

Fichter will soon announce six regional managers of refrigeration specialties, one for each of the areas into which the Electric Appliance Div. has been divided.

Bryant, manager of the room air conditioner department, has been with Westinghouse since 1945, when he became a factory representative for appliances in the northwestern district with headquarters in Chicago. He had previously served in the Navy following graduation from Purdue university. In 1948, he was made district sales promotion manager, and in 1950, northwestern district manager, which position he has held until his recent appointment.

Hartley, manager of the water cooler and dehumidifier department, entered Westinghouse on the graduate student course in 1927 following graduation from Ohio Northern university. He served as a sales engineer in the range department at Mansfield from 1931 to 1940, when he was made a representative in Washington.

He returned to Mansfield in 1941, and was in the range sales department until 1945, when he became a factory representative in the central district, headquartered then at Mansfield, and was named sales promotion manager for the district in 1947.

Watts, manager of the beverage cooler department, came with Westinghouse in 1935 as a field service supervisor. Since 1944 he has been manager of the beverage cooler department of the Electric Appliance Div. here.

Lynch, manager of sales training, has been a major appliance factory representative since joining Westinghouse in 1950. Prior to that he held several merchandising posts in the industry, and was a professor of retailing at Marshall college, Huntington, W. Va.



E. P. HARTLEY



E. C. WATTS

Knoerr, advertising supervisor, comes to his new position from the Rich Lithographing Co., Chicopee Falls, Mass., where he was production and sales manager.

Abbott, merchandise manager for room air conditioners, joined Westinghouse at Springfield in 1942, and following Navy service, returned in 1946. From 1948 until 1951 he was with the Westinghouse Electric Supply Co., and returned in 1952 as merchandise manager for what was then known as refrigeration specialties.

Mermet, product supervisor for room air conditioners, came with Westinghouse in Springfield in 1937, and, following a number of assignments in the manufacturing department, became a superintendent. He joined the sales department in 1953.

Moquin, merchandise manager for water coolers and dehumidifiers, is a native of Springfield, and joined Westinghouse here in 1946. He became a refrigeration specialties sales assistant in 1947, and since 1952 has been a factory representative in New York.

Guiheen, product supervisor for water coolers and dehumidifiers, is also a native of Springfield, and came with Westinghouse here in 1943. Following Army Air Force service, he returned in 1946 to his job in the production department. In 1952 he transferred to the refrigeration specialties sales department, and has served there until his recent appointment.

Gordon, merchandise manager for beverage coolers, first joined Westinghouse in 1936 at Electric Appliance Div. headquarters in Mansfield, Ohio. He left the company in 1945 and returned in 1950, this time to the Chicago office of the Appliance Div. He has most recently been a major appliance factory representative in St. Paul.

Harrison, product supervisor for beverage coolers, joined Westinghouse here in 1925. He was made a salesman in 1939, and later served as a service supervisor. He returned to sales work in 1944.

ALCO 402 — ENGINEERED FOR SERVICE ENGINEERS

Freon-12— $\frac{1}{4}$,
 $\frac{1}{2}$ and 1 Ton
Freon-22— $\frac{1}{4}$,
 $\frac{1}{2}$ and 1.6 Tons
Methyl Chloride
 $\frac{1}{2}$, 1 and 2 Tons

ALCO 402 — THERMO VALVE



ASK YOUR ALCO WHOLESALER

ALCO VALVE CO.

853 KINGSLAND AVE. • ST. LOUIS 5, MO.

Designers and Manufacturers of Thermostatic Expansion Valves; Evaporator Pressure Regulators; Solenoid Valves; Float Valves; Float Switches.

6030

HASTINGS THE FRESH AIR SYSTEM
AIR CONTROL Air Conditioning

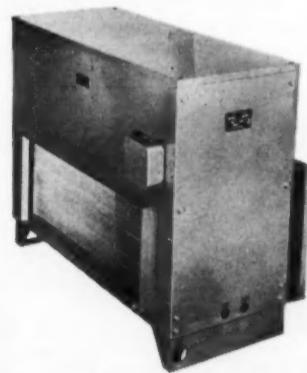
ELECTRIFYING NEWS!

The Exclusive
HASTINGS COOL-PACK
AIR CONDITIONER for Home or Business

3 to 4 Tons Cooling
with 1 1/2 H.P. Compressor
SENSATIONALLY PRICED
TO THE TRADE AT \$525

Look at these features

- Completely packaged unit with compressor and control circuit.
- May be attached to any furnace.
- Combination water and DX coil.
- 3 to 4 tons cooling capacity using up to 70° water.
- 1 1/2 HP, 220 V, 1 phase compressor — no power problems.
- Cools with up to 100% fresh air ventilation.
- Booster blower attachment available.
- Unit complete with blower is designed for business installations.



HASTINGS "COOL-PACK"—THE GREATEST MONEY MAKER IN THE COOLING FIELD

HASTINGS THE FRESH AIR SYSTEM
AIR CONTROL Air Conditioning

Write — Phone — Wire
HASTINGS AIR CONTROL, INC.
Dept. A-4
3215 Leavenworth St. OMAHA 5, NEBR. Phone JACKson 4422

Outside Salesmen Are Still Needed**In Spite of TV, the Way To Get Orders Is Contact In Homes, Utility Finds**

TOLEDO — Admitting that the high cost of outside appliance salesmen is hard to justify from a profit standpoint in areas where price cutting is acute, Charles Harrison, vice president in charge of sales for the Toledo Edison Co., firmly believes, however, that "somebody ought to go out to the home and ask for the order."

"Television is a wonderful thing," he declared, "and I believe that it is changing the habits of the people. They are staying home more and are more aware of home needs."

"In addition, television is doing one of the hardest jobs the appliance salesman has—getting into the home and giving a demonstration before the whole family."

"Every night of the week, TV personalities like Betty Furness are showing millions of people in their homes what various major appliances will do for them and how they operate. Right at that moment, the husband and wife might decide that they want one and can use it."

"But by the next morning, they are busy with other things and the new washer, refrigerator, or dryer, slips from their minds and they don't do anything about it."

"We believe that the salesman who goes to the house and asks the housewife for the order will get it."

Harrison noted, however, that there wasn't an appliance dealer in Toledo who was sending out salesmen to contact people in their homes. This is understandable, he said, because they find it hard to pay an outside salesman the commissions he should get when they cannot realize their full margin of profit on the sale.

The utility does have an outside sales force of 34 men, Harrison said. They are out selling washers,

dryers, and other appliances that will produce a good year-round load for the utility. They do not handle appliances that produce small or intermittent loads, such as air conditioners or television sets.

"We have these men out mainly because we feel that there should be someone calling on people in their homes," Harrison asserted. "We have to pay these men 17½% commission, which is generally half of our gross margin on the appliance."

"While our men are selling enough to make the operation profitable, it would be very hard to justify on a strictly merchandising basis. But we figure that for every customer who buys an appliance from us at full list price—and we only sell at list price—four or five others will go to some cut price dealer and buy."

"While this would not be satisfactory to an appliance dealer, it is to us, because we still get the electrical load, which is what we are primarily interested in. We feel that even though we did not get the sales ourselves, we stimulated the prospect to the point where he actually went out and bought."

"From that standpoint, we consider our outside selling program a success."

**You May Not Be a Millionaire
But You Can Work Like One,
Says Room Cooler Ad**

NEW YORK CITY—"At least 123 millionaires enjoy Fedders air conditioning in their offices," Billen Engineers, local Fedders dealer, informed businessmen in an advertisement appearing in the *New York Times* recently.

"Not because it's costly," the advertisement explained, "but because it's more efficient and dependable."

The copy continued to outline the various features that the unit offered to the businessman. A picture of the unit and a close-up of the "Weather Bureau" was included.

The advertisement invited readers to "Call Now for Free Survey" and emphasized that Billen Engineers was a "Fedders Authorized Dealer."

**Terry, Bastian Promoted In
Philco A. C. Engineering**

PHILADELPHIA—Promotion of M. C. Terry and Leonard C. Bastian to new positions in the Philco Corp. Appliance Div. engineering department for air conditioning, was announced recently by Harold W. Schaefer, vice president in charge of engineering for the division.

Terry was named executive engineer for air conditioning. He joined Philco in 1943 in the refrigeration engineering department.

Bastian was appointed chief engineer for air conditioning. He joined Philco in 1950 as a field representative in quality control.

**Minneapolis Assn. Adopts
Code of Business Ethics**

MINNEAPOLIS — Formulation of a code of business ethics has been completed and the code approved by the membership of the Minneapolis Appliance Dealers Association.

Principles of the code of business ethics approved by the association are:

In all consumer contacts, tell the truth about what is being offered for sale.

Avoid all tricky schemes in advertising, selling, servicing, and pricing which will mislead and defraud the public.

Sell merchandise on its own merits and refrain from knocking competitors.

Uphold the tradition of this profession, remembering that customer satisfaction is the first objective.

Guarantee each product and render prompt, efficient, courteous service.

Honor a franchise, being consistent with the terms set forth by the manufacturer and refrain from injuring competition through misuse of any franchise rights.

Presentation of the code was made by Francis Henry, Henry Appliance, Osseo, Minn., chairman of the association's consumer relations committee.

Other members of the committee,

which will be responsible for enforcing the code, are: Ed Counselman, Dependable Appliance; Stan Hanks, The Groveland Co.; Bob Krumholz, Krumholz Co.; and Matt Schaefer, Viele Electric Co., all of Minneapolis.

**Phileco Issues Booklet for
Public on Room Coolers**

PHILADELPHIA—A new consumer's booklet on how to buy a room air conditioner has been released by Philco Corp.

The booklet, "There is a Big Difference in Room Air Conditioners," has been prepared by the room air conditioning department of the company's appliance division. Its theme is based on the importance of selecting a room air conditioner on the basis of quality, features, design, and proven dependability.

It divides room air conditioners into three groups:

1. All year-round models with reverse cycle systems that heat as well as cool the same size room plus automatic temperature control that prevents overcooling.

2. Automatic room air conditioners that do not have the heating feature, but do have automatic temperature control.

3. Advanced design room air conditioners that cool a room but do not have either reverse cycle heating or automatic temperature control.

**Carrier Names Bond Mgr.
At Houston Branch Office**

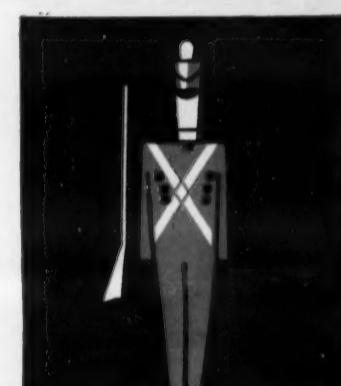
HOUSTON, Texas — Gordon V. Bond, senior sales engineer for Carrier Corp. in metropolitan New York City, has been named branch manager of the firm's Houston office, it was announced by Charles V. Fenn, vice president, Machinery and Systems Div.

Bond, who celebrates his 20th anniversary with the company this year, replaces Oscar H. Mehl, former Houston manager who has been transferred to the Dallas district office.

For the last six years, Bond has sold contracts for major air conditioning installations totaling more than \$1,000,000 annually. Some of his outstanding sales include such famous Manhattan buildings and addresses as Lever House, Sinclair Oil building, Mutual Life Insurance building, 100 Park Ave., and 1407 Broadway.

JUST ASK US!

Turn to "What's New" Page for useful information on new products.



**new low-cost high capacity
MUELLER BRASS CO.**

GUARDSMAN DRIER dries your refrigerant

faster and keeps it moisture-free



4½ sq. in.
dual dome screen
plus 100 mesh
inlet screen
provides 61% more
filter area.

spun end
construction holds
more desiccant
without increasing
drier size.

new PA
400 silica gel
gives 98%
more drying
capacity.

inlet baffle and
dispersion plate
distributes flow of
refrigerant evenly
throughout the
desiccant.

spun copper body
with silver brazed
connections provides
strong, leakproof
construction.

available in a wide
range of sizes from
4 to 32 cu. in. with
suitable end connec-
tions; packed in
sturdy, dustproof
containers.

**WALL
WIRE PRODUCTS
COMPANY**
A FOREMOST NAME IN
THE MANUFACTURE OF
DIVERSIFIED WIRE PRODUCTS
OF SUPERIOR QUALITY

**ORIGINATORS OF WIRE & TUBE
CONDENSERS FOR STATIC AND
FORCED CONVECTION, AND OF
WIRE & TUBE FREEZER SHELVES**

**STAINLESS STEEL SHELVES,
SHELVES WITH CHROME PLATE,
ZINC PLATE, PRO SEAL AND
PORCELIZED FINISH**

**WIRE GRILLES • GUARDS
MATERIAL HANDLING BASKETS
MISCELLANEOUS FORMED AND
WELDED WIRE ASSEMBLIES
ARC WELDED ASSEMBLIES.**

**WALL WIRE PRODUCTS CO.
PLYMOUTH, MICHIGAN**

**MR. DEALER! GIVE YOUR SALES A BOOST
WITH THIS BIG PROFIT MAKER!**

Pinnacle Single-Duty SELF-SERVICE CASE

FEATURES

- Goes through 36" door way!
- Large Storage and Display areas!
- Removable Storage Bins!
- Scientifically Refrigerated Shelves!
- Gleaming White Lifetime Porcelain on exterior front, ends and wearing surfaces!
- Fluorescent Lighting!
- Low Operating Cost!
- Comes in 8', 8", and 10-Foot Lengths!

The most-wanted Fruit and Produce Case on the market today. Small store operators are cramped for space and need this refrigerated space-saving case to eliminate spoilage of perishables!

Note: Self-contained Models also available.

Write for four-color folder and Full Details.

Pinnacle
EQUIPMENT CORPORATION
FLEETWOOD, PENNSYLVANIA
EXPORT DEPT.—39 Broadway, New York

MUELLER BRASS CO. PORT HURON 9, MICHIGAN

INSIDE DOPE

U Learn to live and laugh—
Thus delay your epitaph **A**

By **GEORGE**
F. TAUBENECK

(Concluded from Page 1, Col. 1)
more letters than he can answer
promptly or adequately.

In another role, as conductor of this column, "Dope" sometimes gets lonely for mail. Whenever this happens, there's a sure-fire, double-barreled formula for getting letters from readers:

(1) Raise hell with politicians, and blast government interference with business. This always strikes a sensitive nerve, and approving letters arrive by the bushel.

(2) Run a puzzle. This is even more intriguing, because it reveals segments of readers we never suspected would be interested in the "Dope" column.

Samples from our last puzzle entry:

Aluminum Co. of America
Louisville 2, Ky.

Editor:
Received your fine paper today with the usual pleasure. I certainly benefit from reading your thorough coverage of the news of the industry, and along with everyone else in the office, get a big kick out of "Inside Dope."

On the attached sheet are my solutions to the three problems contributed by R. B. Wynde. I enjoyed working them out but please don't print any more. This is no time for a sales engineer to be sitting in his office mentally planting trees. Such activity doesn't put oranges and biscuits on the table—or aluminum in the customers' plant.

E. W. JOHNSON

Anchor-Temp Co.
St. Louis 5, Mo.

Editor:

Nobody, including George himself, knows what is coming out next in "Inside Dope." Just to prove we always peruse everything, we have worked your little puzzles.

OTTO G. TINKEY

John Herrel & Sons, Inc.
Columbus 6, Ohio

Editor:

I read your column regularly in the NEWS and get quite a lot of enjoyment from same. Herewith solutions to your puzzles.

GEORGE F. PRESLEY

Flint, Mich.

Editor:

Being an ardent reader of yours since subscribing to the NEWS several months ago, I couldn't resist your problems which appear in the current issue.

ARTHUR HENDRIKSEN

In addition to the above gentlemen, the following readers were

among the first 20 to submit accurate puzzle solutions:

Gayle L. Robinson
Robinson Electric
Thermopolis, Wyoming
R. L. Jones
Backus Refrigeration Service
314 North 19th St.
Columbia, Mo.

T. B. Blackwell
Bowen Refrigeration Supplies, Inc.
610 West Morehead St.
Charlotte, N. C.

Norman P. Nelson, Engineer
M. G. Lehman Co.
720 O St.
Lincoln, Neb.

Russell Dagenais

Allenville, Mich.

E. R. Whitehead, Manager
F. H. Langsenkamp Co.
333 Hydraulic Ave.
South Bend 22, Ind.

R. Porter Smith, President
Smith & Waldman Appliance Co.
2550 N. Campbell
Tucson, Ariz.

J. R. Caulk, Jr.
Hussmann Refrigerator Co.
2401 N. Leffingwell Ave.
St. Louis 6, Mo.

Henry Veldheer
Refrigeration Service
137 W. 17th St.
Holland, Mich.

H. A. Smith
Smith Refrigeration Service
115 Withers Ave.
Lexington, Ky.

Boys in the Parts Dept.
Davis-Davidson Co.

311 E. Second St.
Davenport, Iowa
P. O. Box 87
Leslie G. Gerdts
Frigidaire & Household
Appliances Dept.
General Motors Corp.
224 West 57th St.
New York 19, N. Y.

H. L. Lockridge
Allied Sheet Metal & Roofing Co.
3618 Clinton Dr.
Houston 20, Texas

Leo Domijan
c/o The Stanley Works
New Britain, Conn.

R. E. Nunnally
Veterans Trade School
Amistown, Ala.

L. F. Funke
Seeger Refrigerator Co.
Evansville 7, Ind.

Fun In Arizona

Here's some amusement from *Arizona Progress*, which believe it or not, is a bank publication.

"We are not much for crusades, but there is one movement we should like to lead. It has to do with revising the calendar. Although we care not whether there are twelve or thirteen months in a year, a change in the weekly calendar is imperative. Mondays should be abolished.

"This year even March 15th fell on a Monday, but the trouble usually stems from the necessity of making a living. Although we may achieve a measure of relaxation on Sunday, subconsciously we know the alarm will clang at break of dawn next morning. On arriving at office or factory, we find that the heat has been off for two nights. The temperature is a nippy 52°. We leave on our overcoat and gloves for awhile, but that looks screwy so we take them off and risk chilblains.

"In summer the old morgue is hot, stuffy, and conducive to an acute attack of claustrophobia. Regardless of season, the weekend survivors (laughingly known as fellow-workers) straggle in moaning, limping, or in a comatose state that resembles sleepwalking. They are obviously in no condition to do anything but nurse their wounds and recount their harrowing experiences.

"The Monday mail is measured in truckloads rather than in items and comprises not only the usual run of troublesome letters but newspapers, magazines, market reports, circulars, questionnaires, charitable requests, etc. Even if you had nothing else to do, it would take all week to plow through this postal effluvia.

"Then there are the Monday callers. Assorted pests apparently sit home over the weekend thinking up silly questions or inventing gadgets, gimmicks, or infallible systems for beating the stock market or the roulette wheel at Las Vegas. Why they believe we would be interested is a prime mystery, but our post-sabbatical resistance is low and even salesmen cannot be brushed off with the callous aplomb that develops later in the week.

"Our plan has one drawback. The horrendous things that now take place on Monday might still occur on Tuesday instead. That is a problem we had not anticipated, but we are working on it."

Help for Businessmen

The modern businessman is often plagued by his inability to read all of the vast amount of material flowing over his desk each day. This frequently accounts for the thick briefcase carried home at night or the high stack of data on the corner of a desk.

Recently 23 businessmen in Kalamazoo, tired of this constant backlog of information which they needed to assimilate, asked Homer L. J. Carter, director of the psycho-educational clinic at Western Michigan college, for help.

They got that assistance, and

the results 10 weeks later revealed that it paid off handsomely. The men spent two hours a week for 10 weeks working with Mr. Carter and his staff, using as textual material those things which they normally worked with.

For the 23 men, ranging in age from 26 to 62, the average final scores showed an increase of 70% in reading rate, and a surprising rise of 15% in comprehension. But it did!

Carter states that the average adult reads about 250 words a minute, while two of his business-men-students showed records of 300 w.p.m. to start and 504 w.p.m. at the end; another, 168 w.p.m. rising to 444 w.p.m. While the average adult comprehends about 65% of what he reads, typical before and after scores were 77% to 93%, 72% to 86%, and 65% to 75%.

"These men worked hard," declared Carter, "and they found that it paid off. Many want to continue with the class, and others ask that another class be started so that their friends may enroll."

Poetic Justice

From the teeming, crowded, multitudinous and multifarious farmer's daughter tales, here's one that can be tagged with a blue ribbon.

Whilst "beating the bushes" in rural Iowa, two salesmen of farm machinery lost their way on a lonely one-car trail, and ran out of gas at the tired hour of 1 a.m.

They abandoned their automobile, and plodded onward, seeking temporary shelter. Just when they were about ready to give up, they spied a darkened farm house. Thankfully they dashed thither, pounded on the front door, and—to their amazement—were invited inside by a lovely young woman who was attired in the filthiest of robin's-egg-blue negligees. Stammeringly they inquired if she could give them a place to sleep overnight.

"Surely, gentlemen. Come this way. There's a spare bedroom upstairs . . ."

Two years later, one farm equipment salesman button-holed his erstwhile partner and demanded: "Geoff, did you wait till I fell asleep that night in Iowa, and get better acquainted with the luscious farmer's daughter?"

"Come to think of it," Geoff admitted sheepishly, "I did."

"You dog, you gave your name as mine, didn't you?"

"Er, uh-huh," Geoff sighed.

"Well, brace yourself. The trustee of her estate has informed me that she died last week, and left the farm and \$64,000 cash to me!"

It Could Happen to Any of Us

Way up in Medicine Hat, Canada, a wealthy eccentric hired a local craftsman to build him a special sort of billiard table. Slapping down several hundred-dollar-bills, he instructed the craftsman that said billiard table must be triangular, with two pockets and two legs, and must be covered with pink velvet.

"But a special job like that will cost you at least two thousand dollars," the aghast cabinet-maker warned his peculiar customer.

"Oh, that's all right," agreed the wealthy patron. "How long will it take you to build the table?"

"About four months."

Shortly before the contracted date, the old cabinet-maker learned that his nuts-to-the-expense customer had been killed in an auto accident, and that the delivery of this odd table should be canceled.

So if any of you readers have been looking for a triangular billiard table with two pockets and two legs, covered with pink velvet, please let him know.

(Concluded on next page)

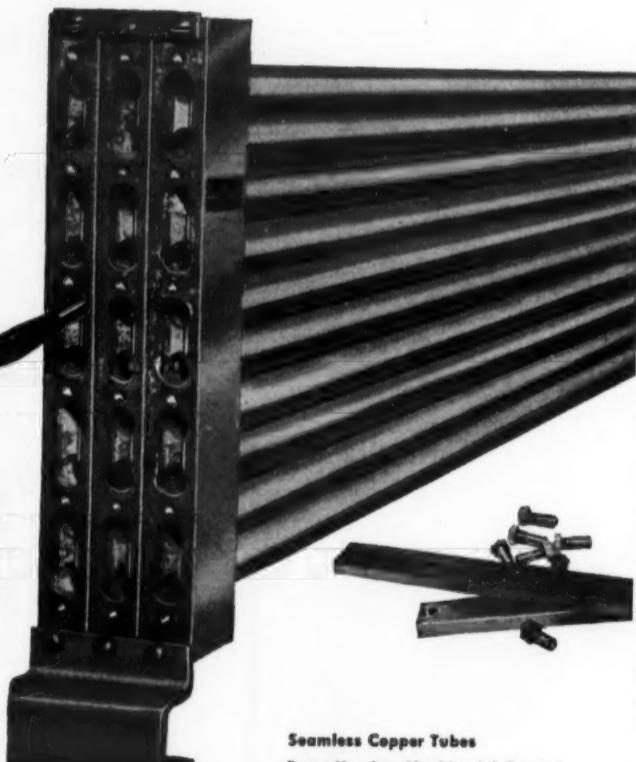
Your No. 1 DEMAND...
the CONDENSER must be
CLEANABLE

Because...

CLEANABILITY costs no more in the new HM condensers. Tremendous productive capacity has now made even the smallest models ($\frac{1}{3}$ H.P.) competitive with non-cleanable units.

CLEANABILITY is available now from many manufacturers who are equipping even their smallest assemblies with cleanable HM condensers in answer to industry demands.

CLEANABILITY prolongs the life of any unit—maintains new-unit efficiency indefinitely by removing corrosion accumulation. A spiral tool does the cleaning job.



Seamless Copper Tubes
Brass Headers Machined & Brazed

Why not insist that your next unit have a CLEANABLE water-cooled condenser? Especially since leading manufacturers, one after the other, are recognizing the "must" advantages of accessibility to cleaning and are equipping their units accordingly.

They realize that initial purchase cost is no higher, and longer life and more economical performance are guaranteed. The CLEANABLE feature

enables you to recover new-unit efficiency and thus maintain 100% economical operation indefinitely.

In Halstead & Mitchell Cleanable Condensers, water tubes are accessible from both ends on all size models $\frac{1}{6}$ through 25 ton—all water cooled, double tube, counter flow.

Halstead & Mitchell

Wholesalers in Principal Cities—Write for descriptive literature

OFFICES: BESSEMER BUILDING • PITTSBURGH 22, PA.

INSIDE DOPE

Learn to live and laugh—
Thus delay your epitaph

By GEORGE F. TAUBENECK

(Concluded from preceding page)

Unknown Here

Having decided that estate taxes were too high and that he might as well enjoy his money, a wealthy sportsman hired a famous architect to design blueprints for a magnificent hunting lodge.

The specifications were sent to a local contractor. The latter lived near the small town where the lodge was to be located, and he was a practical man.

Shortly after receiving the specifications, this contractor wired:

"MUST SEE YOU. PLANS AIN'T RIGHT."

Annoyed with the delay, the rich man sent the following short-tempered telegram:

"START BUILDING IMMEDIATELY. PLANS O.K."

On the following day, another plaintive telegram from the builder arrived, to wit:

"EXPENSIVE MISTAKE IN BLUEPRINTS. THEY CALL FOR TWO BATHROOMS."

What's All the Commotion?

Professor John Ahern of the Illinois Institute of Technology, who is one of the world's foremost safety engineers, spends much of his time dealing with (and trying to prevent) fires, explosions, and other disasters. You'd think that this occupation would make a man dour and lugubrious, but it doesn't. He has a grand sense of fun.

Although he can recount hair-raising anecdotes, he also tells gay yarns about his hazardous profession. Such as the tale of the safety engineer who liked mince pie.

This fellow had been inspecting possible fire hazards in a large hotel, and at the close of the day's work, he came to the kitchen. There the unmistakable aroma of mince pies a-baking tilted his nostrils.

"I say," he addressed the baker, "how're chances of me buying a couple of those pies? Nothing I love better than good mince pie."

"Sure, sure," agreed the baker. "Stick around for half an hour and I'll give you a couple."

To while away the time he elevated to the roof and leaned over the parapet to watch the kaleidoscopic stream of traffic below. Across the way, an occupant of a nearby building got the notion that our safety engineer was thinking of committing suicide with a grand leap to the street. Police and fire departments were informed.

To the great interest of the engineer, the scene below soon filled up with fire trucks, ambulances, and police squad cars. Safety nets were spread, and firemen threw up ladders. All very exciting.

While watching this tableau a cop leaped on his back, pinned him down, handcuffed him, and panted:

"And what did yer figger on doin', me fine friend?"

"Me?" blinked the shocked safety engineer. "All I'm doing is waiting for some mince pies."

Regional Sales Manager

Major manufacturer of complete line of ceiling suspended coils, air conditioning coils, and evaporative condensers has opening for qualified man as regional sales manager. High compensation potential in a growing business. Send resume of business and personal experience to Box 4521, Air Conditioning & Refrigeration News.

Thought for the Week

"The root weakness of Socialists is that they dislike human nature, and this weakness infects the bureaucracy upon which Socialism depends."—JOHN GLOAG.

Economics for Everyone

Prosperity is a condition under which:

(1) Nearly everybody who can work hard and receives good wages.

(2) An increasing volume of goods and services is produced.

(3) These goods and services are enjoyed by an ever-growing number of people.

To conjugate the relationship of profits and prosperity, we should learn how profits affect:

(1) The number of people working and the wages they receive.

(2) The volume of production, and

(3) The sharing of that production.

Let's look at each factor separately.

Before a large number of people can be working, costly tools must be bought. To justify better wages, workers must have tools which will produce more things faster.

Such tools come into being when people who have saved money decide not to spend it for pleasures but, instead, to buy stock in producing concerns. They do this with the expectation of getting paid for the use of their lent money.

High productivity and consumption, thereupon, require the best possible use of investments. This condition exists only when business is profitable. Hence, earned profits for investment purposes should be kept safe from unfair taxation and government confiscation.

Tool owners and tool users make money with each other, not out of each other.

Q.E.D.: Profit is the spark plug of prosperity. Without this spark plug, America will have fewer tools, less employment, and smaller wages. From comparative opulence we'd descend to Old World poverty.

Worthy Project

Senator Schoepel of Kansas has introduced a bill amending Section 8 (the secondary boycott section) of the Taft-Hartley Act.

The bill (S.2989) closes loopholes that have been found in the secondary boycott language and in interpretations of the Taft-Hartley Act during the past seven years.

It is designed to outlaw indefensible pressures which unions put on disinterested and innocent employers and employees.

In essence, his bill makes it unlawful for a union or its agents to exert any form of economic pressure or threats for the purpose of compelling an employer to cease doing business with some other person.

Provisions of the bill are outlined as follows:

1. *The "Primary Site" Loophole.*

The inducement of unlawful secondary boycotts "at any place" is made unlawful by the proposed language. The proposed wording will make it unlawful for pickets to follow trucks of an employer involved in a labor dispute to the premises of an employer not involved in a labor dispute. It will prevent all picketing and other inducement wherever it may take place which is directed towards the employees of a disinterested employer.

2. *The "Employe" Loophole.*

Because the language of the present Act does not include railroad employees, agricultural workers, and certain other groups within the technical definition of the term "employe," it has been held by NLRB that these individuals may be urged by unions to engage in a secondary boycott with-

out penalty. By changing the word "employe" to "person," this loophole will be closed.

For example, NLRB held in a California case that an otherwise illegal secondary boycott by an agricultural workers union was lawful because agricultural employees are not covered by the Taft-Hartley Act definition.

3. *The "Concerted" Activity Loophole.*

Supreme Court and NLRB decisions hint that a secondary boycott by a single employee of a neutral employer is not unlawful. Support for this thinking is based on the use of the word "concerted" in Section 8 (b) (4). The proposal eliminates that word.

In one case, a union induced an employee to quit his job and the Board held that such inducement was not a violation of the Taft-Hartley Act because only one employee was involved and the quitting was not "concerted." The employee involved held a vital position and his absence from his job put effective pressure on his employer.

4. *"Hot Cargo" Boycotts.*

The Board's decisions have the effect of permitting unions to engage in secondary boycotts where the employees of the neutral employer are covered by a union contract clause approving the refusal to handle "hot goods."

"Hot goods" are products labeled by a union as "unfair," for any reason, such as not bearing the union label, not having been pro-

duced by union labor, being farmed-out work, etc.

This is a secondary boycott by union contract clause. It creates a tremendous loophole in the present secondary boycott protection.

The Schoepel bill specifically prevents such an interpretation in clause "(ii)":

5. *Threats to Supervisors and Secondary Consumer Boycotts.*

The present law has been construed by NLRB to permit threats of secondary boycotts directed against employers, supervisors, and other managerial persons. In some industries, such threats are more effective from the union's point of view than the inducement of the "employees" themselves.

Because the Act prohibits a union from inducing "employees," it has been held that pressures may be put on employers without fear of penalty.

For instance, NLRB found that a boycott called through supervisors of a neutral employer who were threatened by a union was not an illegal secondary boycott. Clause "(iii)" will close this loophole:

"(iii) to coerce or restrain employers by force or economic reprisal, or threats thereof."

Secondary consumer or customer boycotts are left untouched by the wording of the present Act. The customer entrances of a department store can be picketed simply because the union has an argument with the manufacturer of a product sold by the store.

A filling station can be boycotted merely because it sponsors a program on a radio or television station with which the union has a dispute. These secondary boycotts are made unlawful by the language of this particular clause.

6. *The "Refusal to Accept Employment" Loophole.*

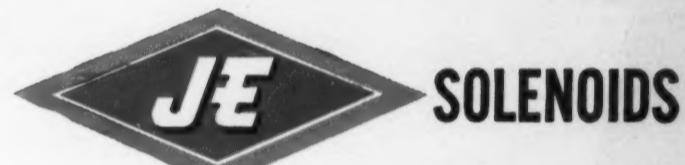
A union in Joliet, Ill., with NLRB approval has conducted a secondary boycott without breaching the law by telling its members not to accept employment with "unfair" contractors. The reasoning is that the law, as written, forbids only the inducement of employees who are actually working.

The Board held that the union action in telling them not to work on "unfair goods" prior to employment was legal because the inducement did not occur "in the course of their employment."

The wording of clause "(iv)" takes care of this problem:

"(iv) to prevent or discourage the members of any labor organization from entering employment, where an object thereof is"

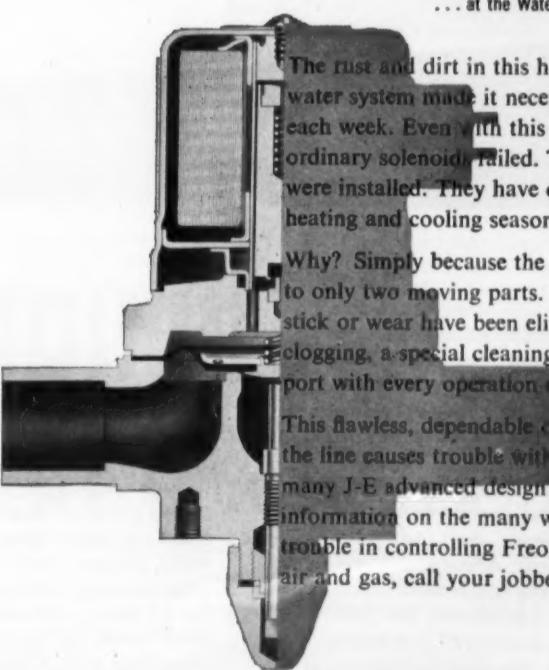
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Forum on Residential Air Conditioning Brings up Many Questions—and Answers

WASHINGTON, D. C.—This is the third in the series of articles presenting the transcribed report of the forum on residential air conditioning held here recently by the Baltimore-Washington section of the American Society of Refrigerating Engineers. The NEWS was privileged to tape record the entire forum.

Published in the two preceding issues were the formal talks of F. Dunning Rupprecht, who served as moderator; Curt Mack, assistant commissioner, underwriting, Federal Housing Authority; Harry Sarshik, president, Home Builders League of South Jersey; George S. Jones, Jr., managing director, Air-Conditioning and Refrigeration Institute, and C. W. Nessel, chairman, field investigation committee, National Warm Air Heating & Air Conditioning Association.

This instalment continues the question-and-answer session which followed the talks.

Should Conditioned Air Pass Through Heater?

Q. Mr. Sarshik questioned the advisability of running the conditioned air through the heater. I believe that our own Mr. Hoyer had a good answer to that one in his paper last month. His conclusion was against it.

Sarshik: I didn't want to question any conclusions reached on the subject. I know this. At NAHB whenever we get together with a group of 10, 15, or 20 engineers, that's one of the top subjects that comes up and we can draw a line down the middle and

get a division of opinion every time.

I don't know which is right or wrong. I do say, however, that the builder who is using manufacturer's equipment who turns out to be using the wrong theory should not be penalized two or three years later when the problems crop up.

Nessel: Might I add a comment on that. We have checked jobs like that out in the field. Maybe our choice of units with respect to manufacturers has been unfortunate. But in every job that we have checked where the chilled air from the conditioner was blown around the heat exchanger we

found the inside of the heat exchanger covered with rust and flakes of rust having dropped down off the inside surfaces and lying over the top of the burner spuds, rendering that burner completely inoperative. We have even seen the outside casing of such a warm air furnace completely rusted out, or almost about to rust out, in two years.

Now some manufacturers tell us that they have a new kind of metal, or a new surface treatment on the inside of their combustion chamber where that won't happen. Maybe it won't, but I haven't yet seen it. I'm willing to take their word for it. But every job that we've checked so far has just been most deplorable.

Locating the Coil In Hot Air Stream

Q. Has the placing of the equipment on the down draft or the discharge side been a factor?

Nessel: We have tested some jobs like that, I suspect maybe four or five of them. We have found no trouble on those jobs so far. That does not mean, however, that we might not. The city

Residential Air Conditioning

had one for two purposes did one of three things:

One scheme we found in the field was a two-speed motor. It had two windings on it so that you had one speed automatically selected for the heating cycle and a higher one for the cooling cycle. The other one had an arrangement whereby the homeowner or a technician could readily change the ratio of the pulleys for summer and winter.

That, of course, is a disagreeable thing because there are days down there, and most anywhere too, I think, when you'll have heating in the early morning and cooling probably by mid-afternoon for a spell of time.

The third arrangement was where they induced added resistance on the warm air side so that the air going through the furnace had added resistance and therefore a restricted air flow.

A diverting damper changed the movement of air either through the heating side or the cooling side. The fan was running at the same speed, but when it went through the heating side it delivered less air because of the higher resistance that was arbitrarily installed in the design of the heating unit.

Rupprecht: Now we've heard some serious considerations of failings in equipment. I'm going to ask Mr. Jones as representative of the manufacturers what he thinks manufacturers are going to do about some of these things.

Jones: You asked the wrong man because I think you've got a pretty good picture here right now as to the complexity of the problems. And I feel at this moment, particularly after the last discussion, pretty much like I did when I waded through the report of the clinic held on residential air conditioning last summer, wasn't it, at Lehigh?

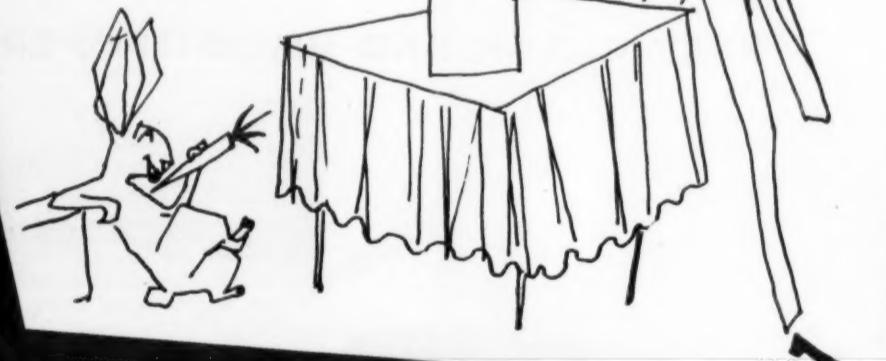
I found that about the only thing I could get out of that was that the experts who gathered there to solve these problems came away from there still lacking agreement on it.

All I can say to you is if anybody expected me, as a representative of the manufacturers, to

(Concluded on next page)

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Questions-Answers on Residential Cooling--

(Continued from preceding page) belittle the problems we are facing you are going to be disappointed, because I have no idea of doing that. It is complex, it is serious. As your moderator stated, the situation seems to be one of almost unlimited potential on the one hand, and almost overwhelming problems on the other.

I simply am content to point out that, recognizing the success or failure of their own company depends on the proper solution of these, you can depend that they're putting the best brains they have or can buy on the problems. But I think it's pretty easy to demonstrate that our problems come primarily from the complete difference in the job of figuring cooling loads and answering cooling problems as compared, for instance, to figuring heating loads and answering heating problems.

I'll use a very oversimplified illustration of what I mean by that. If you, as an engineer or contractor, were going to figure the heating loss in this room, you would come in here when the room is absolutely empty and would know that you were figuring the maximum heat loss involved. Because everything you do in this room with this bunch of machines that are sitting here now, these lights over here, and any motor that might be running, decreases that heat loss.

The exact opposite is true when we are talking about heat gain. If you want to figure the maximum capacity required to cool this room, you would figure it on just exactly the conditions we have here tonight. And then you would in all probability be running into that same situation that has been repeatedly referred to here tonight, particularly by Bill Nessel, that you would inevitably have a cycling proposition that didn't take care of the humidity at all.

Now when we add to that the problems of physiology and psychology, you get at least an idea of what these problems are that are facing us. We can only answer it that we're going to try our damndest to solve them.

Minimum C.F.M./Ton?

Q. With regard to the moisture, what would you say the minimum c.f.m. per ton should be through the ductwork?

Nessel: Well, we're running some tests now at the University of Illinois that I think will determine that. All the data is not yet available. We did work a year ago last summer with 300 c.f.m. per ton, and it did a pretty good cooling job. This past year we were working with 400 c.f.m. I think we will find a difference in the amount of dehumidification that one job will do as compared with the other.

Q. I was speaking of moisture on the ductwork, filters, and that sort of thing.

Nessel: Moisture on the ductwork, brother, you're going to get if you've got warm, humid air against the duct outside, irrespective of what c.f.m. you're putting through it. It's going to be there.

How To Figure Loads

Q. You mentioned that your best results were found on units that were running more or less continually. Did that indicate that we're making a mistake by figuring our heat gains on heat loads instead of the 24-hour-a-day method?

Nessel: If you figure your loads according to the National Warm Air Heating and Air Conditioning Association's Manual No. 11, you will come out with a machine that will be sized slightly undersized, or considerably undersized as you would get it as prescribed in the ASHVE Guide. A machine that is sized according to Manual 11 will run from five to 12 hours, or should run, continuously on peak load conditions.

What Does FHA Want?

Q. I would like to ask Mr. Mack what the refrigeration and air conditioning industry does do now, and what we can do, to speed up the flow of this technical information on the design of residential air conditioning, and on the promulgation of suitable codes. I'd like to hear from him what can be expected of us.

Mack: I hope you'll excuse me if I say that as I sat here and listened in awe to these profound cogitations, computations, adumbrations of technical data, I was wondering what just one poor alleged mortgage underwriter was doing when we all agreed, tacitly, that all this stuff was going to be obsolete in a couple of years. I think maybe I'd better just expunge my remarks from the record.

However, that is said with, if

you'll accept quote a degree unquote of just light-hearted humor.

We've been praying for this material, and this gives me an opportunity to express our appreciation for what I believe to be a great deal of valuable information. We have been enabled to put out, possibly to you, maybe, a naive little outline of basic eligibility requirements. One of them is that there should be evidence that an air cooler will actually cool some air. I think that's reasonable.

We don't have the temerity to talk in terms to our offices of heat gains except in a very general way, because our friends out there who confront the problems of life would think that that guy Mack who signs all these allegedly technical letters has suddenly turned berserk and gone completely nuts because many of our people haven't heard too much about heat gains. We've been struggling with B.t.u. and K factors and heat losses for a long time.

Just to show you how naive a lay guy can get, I was shaving or going to sleep one time when it struck me that if we had insulation in walls that was cellular, bulk type, we wanted a moisture barrier on the inside. And then suddenly it struck me, "My God, we've reversed the weather. Now we're going to get condensation on the inside area of the moisture barrier." And then a wee, small voice told me, "don't be a dope, you dope, you're only going to get a

10° or 15° differential. Go on to sleep." And I went to sleep.

Now I'm not attempting to raise these technical questions. That would be tantamount to self-destruction when we're in such high-level technical company.

But we've had the benefit of your consultation. You have met with us, you've done us the honor at our invitation, and at your own suggestion many of you in the association have come and sat with us—all of which we are grateful for. The only point that I can say, and again I speak for my colleague of VA, we are seekers after light. We pray for light. We're going to get it from you.

If you think that in all cases an approximately 60-lb. moistureproof membrane or other asphaltic or bituminous material should be placed over the ground in the crawl space, I agree with you. We're doing a lot of researching now in connection with the slab-on-grade where there is so-called radiant-type heating. And again, completely concurring, if you please, we agree with you that it is vapor pressure more than capillary action or actual moisture that causes the trouble in slabs on grade.

So if you will give us the benefit of that, we will take it from you, bureaucratically incorporate it in our procedure, and won't give you a damn bit of recognition.

Q. In these jobs that you tested, were they operational type of building projects, or were they where

the party had an architect design it and go along with it?

Nessel: I think out of the jobs that we have tested, nine out of 10 were the project-type house.

Who Designs Jobs?

Q. Who designs the air conditioning jobs for those homes?

Nessel: The local tinner. Perhaps I'm not quite fair in that. Maybe there is an occasional project builder that will hire some consulting engineer or more likely will get the representative of some air conditioning company to come in and lay out the job for him.

But that man who's just building four or five houses here and four or five houses over there, and there's a lot of those operators, will look around and ask three or four tanners to come in and say, "I want an air conditioning system in here along with the heating plant. What price will you give me?"

And the guy that gives him the lowest price designs the system.

Q. Then you can't place the difficulties they might actually be having against the manufacturer of the equipment or the design of the equipment basically that was put down in the basement?

Nessel: That's completely right. It's at the local level.

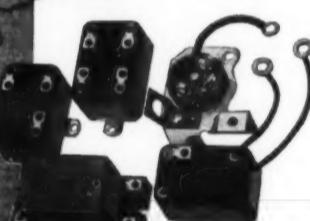
Q. I think that is the thing that's got to be cleaned up.

Nessel: I wish you would tell us how to do it.

(To Be Continued)

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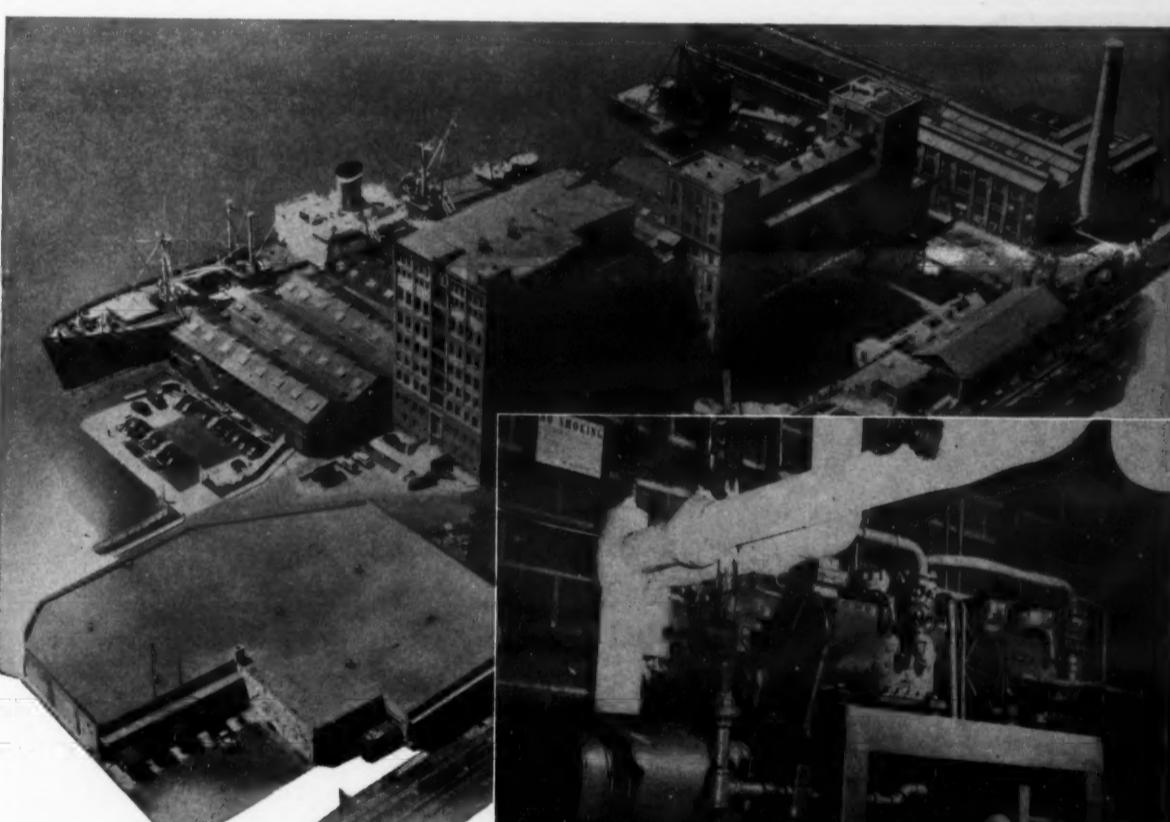
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APRIL 12, 1954

Staunch Problem for Commercial Refrigeration Manufacturers

SPEARHEADED by this publication (yes, we don't mind taking a bow when deserved) refrigerator dealers and servicemen all over the nation have conducted local drives to smash and scrapheap abandoned household refrigerators.

Reason: Too many children climbed inside, locked the doors behind them, and suffocated.

Those local campaigns have been immensely effective in recent months. Of that we are proud. And we're even prouder that so many of our subscribers did the job that needed to be done in their communities, so conscientiously.

They worked overtime to remove a stigma from our business, and to protect the lives of precious Little Folk.

Their quickly responsive reaction points up another, although less dramatic, task that needs attention by the refrigeration industry.

This time the responsibility for removing a hazard falls solely on the over-burdened shoulders of commercial refrigeration manufacturers.

They alone can correct the evil.

How? It will require mechanically inventive ingenuity, plus willingness on the part of manufacturers to expend an extra buck to protect themselves from lawsuits.

What Is that job?

Make walk-in commercial refrigerators unlockable from the inside.

According to newspaper crime reports from almost every-

They'll Do It Every Time Jimmy Hatlo



where, it has become standard practice for stick-up bandits and robbers to herd food-store clerks into commercial refrigerators.

At the point of a gun they lock personnel inside these frigid cells, while taking their time about robbing the store.

In the meantime the grocers and meat-handlers darned near freeze to death.

And the robbers escape, because the robbed can't get out to call police.

Gentlemen in the commercial refrigeration case business:

We'll wager you could capture a bigger share of your market by introducing two-way (inside as well as outside) door-openers for your products.

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You can take it from here—anyone who's interested in enlarging sales volume—and do quite well while improving your competitive position.

At the same time, you'll earn kudos and everlasting loyalty from all the grocery clerks in these grand United States of America.

Thought Starters

"You will lose nothing and may gain greatly by placing your bet on faith in men, rather than on doubt of men, and hope instead of despair."—PASCAL.

Twenty-five college presidents were asked to write the 10 finest words in the English language. Seventeen started their lists with the word "loyalty."—*Mutual Moments*.

"It is an odd thing, but anyone who disappears is said to be seen in San Francisco. It must be a delightful city, and possess all the attractions of the next world."—OSCAR WILDE.

Our world has too much of fear. Emphasis upon dangers is apt to lead to apathetic despair. What our world needs is the opposite; it needs rational creative hope; it needs something positive to live for. It needs "yes" feelings rather than "no" feelings. —BERTRAND RUSSELL.

"We should look with large forgiveness on men's ideas and prejudices because these depend so much on their environment and education!"—JOSEPH CONRAD.

"Your grandpa takes a philosophic view of life," she explained. "He knows darn well that no one wins an argument, but he's got to let off steam. So he fiddles with the radio till he gets some irritating commercial, then he writes down the name of the product it advertises and from that day on will never use it. That way he does not fight with anyone and he relieves his temper."—*United Mine Workers Journal*.

Children will tend to adopt the beliefs of those whom they instinctively recognize as happy, and of no others.—W. E. HOCKING, in "Human Nature and Its Remaking."

Some people would find employment if they were washed up on a desert island. They would find it not only because they have schooled themselves to be useful and creative, but also because they never or rarely waste time in self-pity.—*Christian Science Monitor*.

"What I like about Charleston is that it has resisted attempts to put the country into Arrow collars. If the south had won the war, the country would have had lots more color."—LAURENCE STALLINGS.

"A good education broadens your viewpoint, and enables you to worry about more things in practically all parts of the world."—*Farm Journal*.



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A Case or a Can! Drive-In Beer Store Keeps 500-Case Stock In Large Walk-In

PHOENIX, Ariz.—Making it possible for the customer to drive into the building and directly alongside one of the largest custom-built refrigerators in the southwest has been a sales building feature of the Beer & Wine Depot, opened by George and Dorine Holmes here a year ago.

In appearance, the Beer & Wine Depot closely resembles a drive-through wash rack, with a smart, modern store at the left of a 10-ft. wide driveway, backed up by a 10 by 10-ft. walk-in refrigerator, then open display space, which takes up the remaining third of the building.

With capacity for 500 cases of beer, cooled to 35° or lower, the big walk-in refrigerator is equipped with eight double-pane glass doors, providing access to five tiers of stainless steel shelving on either side of the entrance. In the center, a heavily insulated entrance gives access to the combination storage display space within.

Holmes' policy has been to maintain a stock of some 350 cases of

beer within the cooler, plus another 20 cases or so "on display" behind the glass doors, at either side of the entrance. This makes it possible for the beer customer to serve himself to an assortment of bottled or canned beer, if a variety of brands are involved, or to take home a thoroughly chilled case, if desired. In either instance, the customer can readily park his automobile a step away from the desired beer, fully protected from inclement weather, and providing maximum convenience.

The "liquor store" at the front is actually a misnomer, since due to peculiarities of Arizona liquor licensing, Holmes retails only beer and wine. In the open bay space at the end of the 60-ft.-long driveway through the building, case beer is displayed on convenient pallets.

Because it is possible for the beer customer to pick up six cases or six bottles with equal facility without getting out of his car, the store has built up an impressive volume.

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Food Chain Assn. Study Finds—

Frozen Food Cabinet Space Rises; 93% of Stores Now Have Low-Temperature Walk-Ins

CHICAGO—A survey of members of the National Association of Food Chains revealed that NAFC stores are using an average of 33 linear feet of frozen food cabinet space, compared with 26 in 1951.

The study also disclosed that 93% of the stores have some low temperature walk-in store storage space, against 67% in 1951 and 62% in 1950.

These and other survey findings were reported during a management clinic on frozen foods and fresh produce, conducted recently by NAFC.

A report on the survey said retail sales of frozen foods are expected to account for 9% of total storage volume by 1960. This would compare with an average of 3.75% as of January last for 51 reporting companies operating more than 7,800 stores.

Another prediction was that by 1960, frozen food sales at retail will equal those of produce. Specialties, cooked foods, juices, and meats are expected to provide most of the sales gains.

Questioned regarding frozen food cabinet location, 52% of the respondents said they preferred cases to be near the produce department. Twenty-one per cent

preferred cabinets to be in the grocery department and 20% near the meat department.

The survey found that there have been substantial increases in warehousing of frozen foods by food chains. The percentage of those usually warehousing their own frozen foods is now 65, whereas it was 35 in 1950 and 53 in 1951.

Most NAFC members attending the clinic agreed that pre-packaging of all produce would be adopted generally by 1960.

The steady growth of pre-packaging was discussed at closed sessions on produce, with the main point of debate being where the pre-packaging should be done, it was reported. General feeling was said to be that it should be done at the shipping point or at a central warehouse for quality control.

Named Worthington Agency

SIOUX FALLS, S. D.—Appointment of Automatic Refrigeration & Heating here as sales and service agency for the complete line of Worthington air conditioning equipment has been announced by Gordon Gulbranson, owner of the local firm.

Sormane Heads Marketing For Hotpoint Commercial Equipment Department

CHICAGO—Orrin E. Wolf, vice president and general manager of Hotpoint Co.'s commercial equipment department, has announced the appointment of Sales Manager Walter Sormane to the new post of manager of marketing.

In his new capacity Sormane will direct marketing of Hotpoint equipment designed for hotels, restaurants, institutions, ships, and defense establishments.

Sormane was at one time European manager for the former Marmon Motor Car Co., and subsequently headed sales for two major heating equipment firms.

On assuming his new office Sormane announced the promotion of Cleveland District Manager Leonard Smith to succeed him as sales manager, and Advertising and Sales Promotion Manager Jack E. Schneider to merchandising manager.

Smith joined Hotpoint in 1948. His new assignment will permit personal sales contact in the field on a national level, leaving Sormane free to blueprint high level sales and marketing policies.

Schneider joined Hotpoint nine years ago, and in his new capacity will direct the advertising, sales promotion, public relations, and sales education departments.

MODEL 209 5 WAYS BETTER—

the one valve you can use for:

ANY APPLICATION...

A-P liquid charge makes the 209 a universal valve. Ideal for low temperature, commercial or air conditioning uses.

ANY PRESSURE LIMIT...

0 to 55 lbs. Simply turn adjusting knob to pressure recommended by compressor manufacturer for over-load protection.

ANY SUPERHEAT...

Quick and easy adjustment. Any setting from 0° to 20° . . . closest control at all temperatures.

ANY POSITION...

Functions perfectly in any position — upside down . . . any angle . . . even where valve is installed lower than bulb.

ANY AMBIENT TEMPERATURE

A-P liquid charge allows mounting valve and capillary in any ambient temperature . . . with perfect control.



**10 good reasons why
it pays to buy these A-P valves**

MODEL 207C RATES HIGH ON 5 COUNTS ... you made it an all-industry favorite!

PERFORMS 100%...
on popular F12, F22 and Methyl systems.

VERSATILE SIZES...

In popular 1/2 and 1-ton capacities, A-P liquid charged.

MAINTAINS "STRAIGHT-LINE" SUPERHEAT...

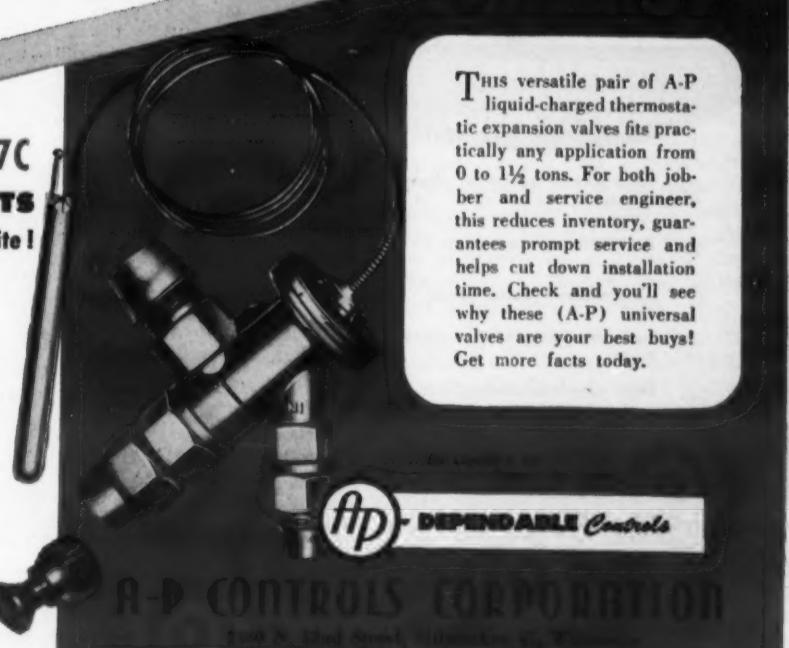
Less than 1/2° superheat variation from -20° to +40°F suction temperatures.

INSTALLS FAST...

Small size fits handily in hard-to-get-at corners of compact equipment.

NOW AVAILABLE...

With or without external equalizer.





For 5th Consecutive Year—

Houston Claims To Be 'Most Air Conditioned City', Top 10 U.S. Cities' Tonnage Listed

HOUSTON, Texas—The Houston Chamber of Commerce reports that Houston in 1953 was the most thoroughly air conditioned city in America for the fifth successive year.

Twelve thousand tons more of air conditioning were installed in 1953 than in 1952, the Chamber's annual survey showed. In 1953, the records show, 31,763 air conditioning units were installed, totaling 42,397 tons. This was an increase of 12,147 tons over the total of 30,250 tons installed in 1952.

Only New York City had a greater total increase, with 133,333 tons installed in its five boroughs, the Chamber survey noted. Thus Houston, with 800,000 people in its metropolitan area according to the 1950 census, has a much greater per capita figure for installations, the Chamber stated.

Third among the first 10 U.S.

cities was Chicago, with 13,650 tons of air conditioning installed in 1953 for a year-end total of 180,317 tons believed to be now in use.

Next came Washington, D. C., with 1953 installations totaling 12,732 tons and an over-all total of 153,341 tons. Dallas had 14,270 tons installed in 1953 bringing the over-all total to 100,422 tons.

Pittsburgh, with 3,152 tons installed in 1953 not including residential units, reached a total of 44,436 tons. Detroit, with 1,004 units totaling 9,379 tons installed in 1953, has a four-year total of 22,666 tons installed. Fort Worth with a 1948-52 central units (2-ton and over) total of 28,045 tons, and 1946-53 residential sales of 18,750 units, totals 14,062 tons. Phoenix, Ariz., with 1953 sales of 434 central and packaged residential units totaling 1,216 tons, has

installed since 1947, 4,830 tons.

Other cities reporting to the Chamber of Commerce survey include New Orleans, with room conditioner sales in 1953 of 26,500 units, and an estimated 1953 total of 22,000 tons of residential installations.

Philadelphia reported 26,391 units sold in 1953, and a total tonnage through 1952 of 124,976 tons. Atlanta reported 6,615 tons installed in 1953, and an over-all total of 41,615 tons.

Los Angeles through 1952 reported 53,334 tons of residential air conditioning. No figures were available for commercial installations.

Cleveland reported 6,375 tons in home units installed in 1953, and a cumulative total of 50,375 tons including both residential and commercial installations through the end of 1953.

Thus Houston, with an over-all total of 241,545 tons of air conditioning installed since the Second National Bank led the way in 1923, appears to have the greatest per capita average for air conditioning—about $\frac{1}{3}$ ton per person—and the second greatest over-all total in the nation, following only New York City, the Chamber concluded.

In 1953 installations included 68 church jobs totaling 2,547 tons, 263 in offices and office buildings totaling 3,209 tons, seven major central systems totaling 1,825 tons in public buildings, 704 tons in 82 smaller shops, 59 jobs in doctors' offices and hospitals totaling 2,192 tons, and home air conditioning in 30,979 residences, totaling 26,733 tons.

Some 75,575 installations have been made in homes since 1946. In 1952 about half the 1953 total was sold, 16,671 units. In 1951 sales totaled 10,279 units, 5,580 units in 1950, only 1,990 in 1949, about 2,470 in 1948, only 692 in 1947, and 147 units in 1946.

Sales Records Shattered In Jan. by Fla. Dealers

MIAMI, Fla.—Appliance and oil-heating dealers in the territory served by the Florida Power and Light Co. sold more equipment during January than in any other preceding January and also topped every other month except December, 1952, and July, 1953. Their total sales amounted to \$5,851,587, the Florida Power and Light Co. reported recently.

The utility said that clothes dryer sales during January increased 431% over the preceding January. Dishwasher sales were up 196%, garbage disposers 149%, air conditioners 122%, vacuum cleaners 101%, clothes washers 79%, water heaters 76%, ranges 33%, refrigerators 21%, television 15%, and oil heaters 7%.

Branch Store Air Conditioned

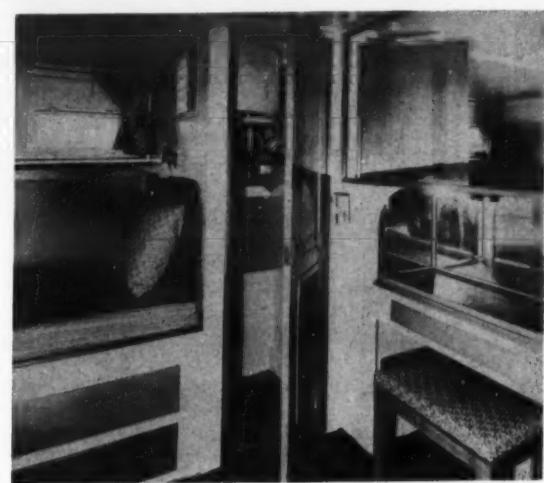
BUFFALO—A complete air conditioning system will be installed in the Airport Plaza branch store of Adam, Meldrum & Anderson Co., according to Robert B. Adam, president. The program will cost about \$250,000 and is set for completion by August. G. Morton Wolf is architect for the project.

Low-Cost Performance Guaranteed The Year-Round



with
KENT
ZERO-CHIP
ICE UNITS
Efficient, compact, well-designed, the KENT Ice Units provide year-round ice needs for as low as \$1 per ton. Capacities 1/2 to 24 tons—may be rented for as little as \$2.50 per ton. No mess, no wet, no ice! No moving drums or metal to metal contact. All PARTS GUARANTEED 5 YEARS! Produces sub-zero, easy-to-handle ice. Check the savings in labor, maintenance, operational costs! WRITE FOR FREE FOLDER, COMPLETE PRICES! DISTRIBUTORS WANTED!

KENT INDUSTRIES, INC.
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TWO BLOWER COIL units are located in closets as part of air conditioning system of 65-ft. yacht.

Ocean Breezes Weren't Enough

'Spotaire' System Air Conditions 65-Ft. Yacht; Low Speed Fans, Remote Compressor Keep Unit Quiet

NEW YORK CITY—Most people head for the sea to escape the heat of land and cool off in the fresh ocean breezes.

But that isn't cool enough for Steven B. Wilson, president of Fram Filter Corp. He has had his 65-ft. flush-deck promenade yacht air conditioned.

A Drayer-Hanson "Spotaire" system is installed on the \$175,000 yacht. The refrigeration compres-

sor is located forward, out of hearing range from the living area. It is connected to two blower-coil units located in closets by $\frac{3}{8}$ -in. copper tubing for "Freon." A large, slow-speed fan makes the system nearly noiseless.

The Spotaire system operates through an ordinary small a.c. converter, already built into the yacht to save on the purchase of electrical appliances.



REMINGTON
specializes in
ROOM AIR CONDITIONING!

You can't expect a garageman to shoe a horse, so why expect the specialists in other fields to turn out the best in room air conditioners?

Remington is the only major manufacturer specializing in Room Air Conditioning. Every day throughout the year every person in every Remington department is concerned solely with making and helping you sell the world's finest line of Room Air Conditioners.

And it's the most complete line—a model and type for every room—at a price for every purse.

These units have been tropic-tested and proved. They give you exclusive selling features no other air conditioner can offer. Remington-made units are one of only two manufacturers' units accepted in the Empire State Building—one of few accepted in many other famous buildings.

And Remington backs your selling efforts with a unique sales-promotion plan—keyed exactly to your particular market.

Send for details on the "Profits Guaranteed" Remington franchise today so that you can take advantage of Remington's sensational FREE pre-season promotion plan.

HEALTH and COMFORT by the roomful



DIVISION OF REMINGTON CORPORATION
11-9 Willey Street, Auburn, N. Y., U. S. A.

Make Room Air Conditioners AUTOMATIC and sell them FASTER



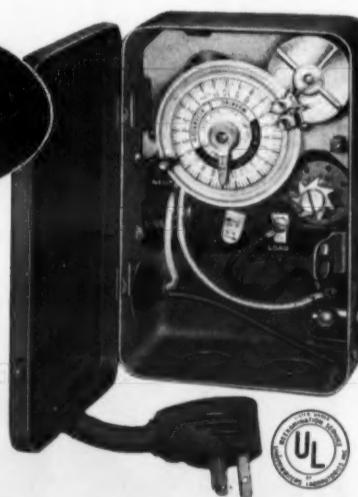
The extra sale of the INTER-MATIC time switch means \$10.00 more profit

Here's a plus feature to offer your prospects and make easier sales for you. An Inter-Matic time switch will automatically turn the office air-conditioner on early, so that it will be cool when the office help . . . and customers . . . arrive. At day's end the unit is turned off automatically, eliminating wasted electricity through forgetfulness. The built-in "Skipper" device allows skipping weekend and holiday operation.

INTER-MATIC

"SKIPPER"
PORTABLE PLUG-IN
TIME SWITCH

- ★ For 2-wire or 3-wire air conditioners, 125 or 250 volts.
- ★ No installation—just plug it in.
- ★ Air-conditioner easier to sell.
- ★ Two sales instead of one—Extra Profit.
- ★ Skips operation automatically on days off.



International Register Co.
2624 W. Washington Blvd., Chicago 12, Illinois

Please send me Bulletin #44R2 on the Inter-Matic Time Switch way to more profits.

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GET THE FACTS, MAN

We'll show you how you can increase sales and profits.

Mail this Coupon Today →

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Veteran Sales Chiefs See Stepped-Up Freezer Sales

Campaign To Stimulate Salesman-Consumer Contact Is Launched

AMANA, Iowa—"Dealer sales volume on freezers will build up whenever the dealer can get his salesmen talking to a prospect about freezers."

So says George Foerstner, executive vice president of Amana Refrigeration, Inc., in discussing the future course of home freezer merchandising, and outlining the reason behind Amana's new and unusual "nylon stocking" sales promotion campaign.

In this nylon stocking promotion, Amana dealers will offer a pair of top quality nylons free for the asking to any woman who will stop in at an Amana dealer's store and listen to a salesman's demonstration of a freezer.

On the basis of reports from his distributors, who are required to report the retail sales of their dealers, Foerstner says that there is a definite strengthening of retail volume in the freezer market.

"We know that where there is active promotion carried on that is bringing the salesman and the freezer prospect together, there are sales being made," says the veteran freezer company executive.

"But we also believe that experience should teach us that today's specialty salesman needs more than inspirational messages and meetings to put him in a position to increase the number of sales that he will close."

Putting Salesman In Touch

For all practical purposes what the salesman needs is something that will get him into a conversation with a prospective purchaser about a product that the prospect needs and is likely to buy.

"That's why we have started our nylon stocking promotion, because while some of the women who pick up the nylons may not be prospects, a lot of them will be, and a great many salesmen are going to get the opportunity to tell the freezer story."

Those women who pick up the nylons will also fill out a card, which we hope will offer some clues as to the best types of demonstration methods, as well as providing an active list of prospects for the dealer."

Does the stocking promotion mean that the freezer-food plan of merchandising home freezers is to be eliminated and supplanted by such more conventional methods of promotion?

Not at all, Foerstner says.

"We have never argued that food plans are the *only* way to sell freezers," Foerstner stated, "but we certainly believe that the sound food plan will sell many freezers and create enthusiastic users who will sell many other people on the

(Concluded on Page 15, Col. 1)

In the following several pages of this issue are stories descriptive of one of the newest production facilities in the industry, that of Amana Refrigeration, Inc., at Amana, Iowa.

During the past several months Air Conditioning & Refrigeration News, as part of its editorial function in presenting all the news about all phases of the industry's activities, has described in some detail some of the new production facilities that companies in the industry have placed in operation.

The Amana plant holds something in the way of special interest, because it is devoted exclusively to the production of two of the industry's newest items—ones which have resulted

Role In Food Economy Assures an Expanding Volume—Hinchliff

AMANA, Iowa—Even though freezer sales have boomed in the post-war period, still greater volume will be attained in the future, predicts E. L. Hinchliff, sales manager of Amana Refrigeration, Inc.

"This future is assured because the freezer has made a place for itself as an essential part of American household economy," Hinchliff said.

"The record of Amana's own sales in the first quarter of 1954 is a dramatic indication of the continuing growth of this appliance," the sales manager pointed out.

"Following a record 1953, which topped 1952 by 20%, sales in the first three months this year show a marked increase over 1953, and all indications point to a banner year for 1954.

"Over-all freezer saturation is up to 15% and is continuing to climb," he continued. "Once industry sales have reached 2 million units a year, then 50% saturation will be attained in the 10 years that follow."

Revolution In Food

"This continuing progress made by the freezer may be attributed in considerable measure to new product developments, such as the 'Stor-Mor' freezer, coupled with the fact that the freezer is a vital part of the revolution that is taking place in the nation's food economy—food handling, food purchasing, distribution, food preparation, and dietary habits.

"The growth of the modern chain store is an example of this revolution taking place in food distribution today.

"At the old independent grocery store a customer would order one can, or one pound of food at a time—just enough for the next meal or two. But in the supermarket, where food is displayed attractively and offered on a self-service basis, this is all changed. With refrigeration in their homes, and food more appealing to buy, people buy a wider variety of foods in larger quantities. Instead of the \$2 or \$5 order, it's \$15 or \$50 now!

"The freezer constitutes an extension of this food buying revolution," Hinchliff pointed out. "With women buying cases of food, the wholesale units of distribution no longer have to be broken up. This is important to the food outlet, because it eliminates the time and labor involved in breaking up the packages, marking, and pricing.

"For the consumer this means economy and the convenience of having a 'supermarket' in the kitchen."

Freezers will continue to be sold only by the organizations that con-

(Concluded on Page 15, Col. 4)

How New Design In Room Cooler Line Came About

New Amana Plant Speeds Freezer, Cooler Output

(Concluded from Page 1, Col. 3)

and built, particularly, around production of the new 1954 "Stor-Mor" door line of freezers.

"When this freezer, with its new and radical design, began to take shape nearly two years ago on our engineers' drawing boards, Amana's management decided to build it with modern equipment and advanced tooling that would guarantee a quality product and at the same time efficient, high-speed production."

Production requirements for the new upright freezers dominate the new plant facilities. Eight giant high-speed presses were installed to form and work cabinets and doors for the new freezers. These 200 to 600-ton presses process some of the largest pieces of steel used in the entire domestic refrigeration industry.

With other presses in Amana's sheet metal department, the plant makes all the stampings and fabricated parts required for manufacture of freezers and air conditioners.

A uniform and chip-resistant finish is applied to the new freezers by an automatic, electrostatic painting system, which Foerstner says is "unique because of the variety of sizes its robot-like batteries of spray guns paint, the large sizes handled, and because it paints freezers in two different colors."

Special equipment in the steel processing department enables Amana to fabricate its own steel pieces from 10-ton coils of steel. The slitting, shearing, and leveling facilities give the plant a singular flexibility and independence.

Assembly Line Setup

All materials flow forward in the plant in a straight line, from the steel processing department to the sheet metal department, through spot welding, metal finishing, painting, to the main assembly lines, to testing, crating, and shipping.

Three principal freezer sub-assemblies make liners, doors, and condensing units. Subassemblies for air conditioners are spaced along the main assembly lines, so completed subassemblies are made exactly where needed.

Other features of the new, ex-

panded plant include: enclosed loading dock facilities with room for 16 railroad cars; a new warehouse; a new air conditioned cafeteria; and expanded assembly lines.

Today, two complete assembly lines turn out freezers, while a third line produces room air conditioners.

The manufacturing operations begin in a section of the plant which in effect is Amana's own steel mill. There, steel is received in coils and processed by slitting, shearing, and leveling equipment into the exact widths and lengths needed for the manufacture of freezers and room air conditioners.

Take Steel In Coils

This ability to handle steel in coils, rather than in sheets, gives the plant a flexibility to adjust the changing conditions of steel and aluminum supply to the varying needs of the plant. Result is a smooth continuity of operations.

About 1,500 tons of steel always are stored at the plant, ready to move into the manufacturing process.

Carload shipments of coils of 14 to 26 gauge cold rolled steel, weighing up to 10 tons each, are unloaded from railroad cars and trucks by an overhead Louden crane. The 10-ton crane operates on a 75-foot long track, which runs across the entire steel handling department.

The steel is cut into the pieces that later become freezer cabinets, doors, room air conditioner cabinets, bases, and several hundred other parts fabricated in the plant. The aluminum is made into freezer liners and shelves.

First, the steel is cut into the desired width, up to 52 inches, on the Wean slitting line. A roll of steel, placed on an uncoiler, feeds to the razor-sharp knives which slit the continuous ribbon of steel to proper width.

How Steel Is Handled

By setting the slitter's multiple knives, as many as a dozen coils can be cut off a single roll at the same time. The slitter can handle 500 feet of steel or about 3,000 pounds a minute.

The slit steel, now in the correct width for a particular part, is rewound on a coil.

At the same time the slit steel, in the proper width for a particular part, is being rewound on a coil, the edges of steel trimmed off the main coil are rewound onto 200-pound balls on a scrap boller. These balls of scrap are picked up periodically by a lift truck.

The slit steel, now in the correct width, is ejected hydraulically onto a buggy and then moved by the overhead crane to the shearing and leveling line.

Here the steel ribbon is cut to the desired length by the 54-inch blade of a Halden Synchronized Guillotine Flying Shear. Cutting at the rate of 175 feet a minute, to an accuracy of $\frac{1}{2}$ of an inch, the shear cuts pieces varying in length from the 172-inch long steel cabinet wrapper for a 19-cubic foot freezer to a 20-inch long lower door panel for the freezer.

The cut pieces feed onto a 20-foot long belt conveyor which leads in turn to a McKay roller leveler. This machine improves the drawing quality of the steel. All three operations—the uncoiler, the shears, and the roller leveler—are synchronized and operated at a single control station. A photoelectric cell insures that the steel passes from the uncoiler to the shear at a uniform rate.

(Continued on Page 24)



STRENGTH OF THE SHELVES, one of the features of Amana's 1954 upright freezer line which is being produced in the company's expanded plant, is demonstrated by George C. Foerstner, executive vice president and founder of Amana Refrigeration, Inc. Looking on is E. L. Hinchliff, sales manager.

Convenience Is the Key To New Freezer Design

AMANA, Iowa—Amana's 1954 line of "Stor-Mor" home freezers represents the culmination of months of research and development, with a final design based on surveys among consumers which showed that convenience was what housewives wanted most.

Amana engineers set out to place the maximum number of frozen food packages in immediate sight. The major factor in bringing this convenience into being in the 1954 freezer line is the Stor-Mor door. In the 19-cu. ft. model, the door holds 116 frozen food packages.

The door stores packages, one on top of the other, in vertical chutes formed by space-saving food holders. As the bottom package is removed, all packages drop one notch into position, and as a result the first package stored is the first served. The food holders can be adjusted easily to accommodate any standard size frozen food package.

The package stacking arrangement is based on a depth dimension of 4 in., which is common to all standard frozen food packages.

The inner door is divided into four sections, each 4 in. deep. Two are adapted for use with the vertical food holders; there is a storage rack, the Juice Bar, for cans of frozen juice concentrate,

and a bin at the bottom of the door to accommodate miscellaneous packages.

Building in this large storage capacity in the door required construction of an exceptionally strong and large door. Because its food load is many times that supported by previous doors, it had to be given unusual strength. As a result, an entirely new concept of door design resulted.

The Stor-Mor door is a double



DOOR SEAL of Amana upright freezer is checked by pulling through a thin strip of metal. If the metal passes through too easily, the cabinet must be adjusted before it proceeds in the assembly operation.

door, with a heavy-gauge steel inner door rigidly attached to the outer door. The two doors cooperate with the corner structures to form a rigid box structure, all steel except for structural thermal barriers, made of plastic, at each corner.

The perimeter space between the inner door and outer door is closed by a one-piece molded high-impact polystyrene breaker frame, which prevents transfer of heat from the outer cabinet into the liner. The plastic frame has a smooth, glossy finish, with no breaks or screws.

The complete door assembly weighs 75 lbs. empty, and with a full load of food, more than 155 lbs. To swing this heavy door, hinges with long-wearing nylon bearings were specially designed. Single curl hinges are used, so that the door can be lifted off the hinges without any removal of screws. This simplifies moving freezers through narrow doorways.

The full-width design of the door is another factor contributing to the maximum visible storage space in the new freezer. Because there are no longer out-of-sight corners in the front of the freezer, there is ready access to all the food in the freezer.

Another feature in the door, contributing to convenience, is a two-way light that throws a soft light on the contents of the door, and stronger illumination on the main food storage compartment.

The door and food load are so great that the main freezer cabi-



AMANA'S EXECUTIVES frequently check manufacturing operations. Here E. L. Hinchliff, sales manager (left), and Walter Wendler, assistant general manager, inspect "Stor-Mor" doors. In the background can be seen completed doors ready to be hung on freezer cabinets.

net is specially reinforced to insure proper alignment of the door gasket and the latch mechanism.

The back of the freezer is built much like an automobile frame. It is embossed 2 in. deep to form the legs of an "X," and at the center of the "X" an embossed plate is welded in place. This automobile frame-like back gives the freezer rigidity to resist distortion.

A new latch mechanism incorporates modern styling with correct latch action. The trigger latch pulls the door shut with a force of 90 lbs. A larger balloon section door gasket seals positively over a large range of door adjustments.

The outer cabinet is a single piece of heavy-gauge, tangent-bent steel, with no seams across the top that might create air leaks. The entire outer case, including back, bottom, feet, and all reinforcements, contain but 12 individual pieces of steel, instead of the 34 in previous models.

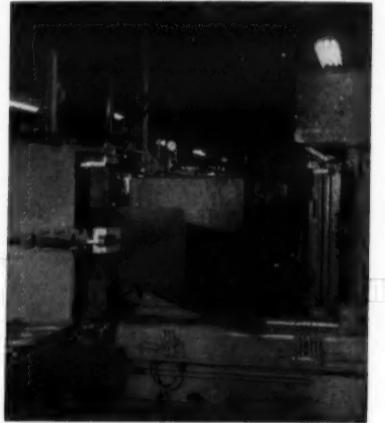
The usual four feet of the cabinet and all brackets and reinforcements used in the machine compartment section have been combined in two identical parts. One is used on each side. A stamped one-piece condensing unit base slides in on the rails formed by the side flanges of the gusset feet.

Freezer cabinets are sealed airtight with a new emulsified asphalt "hot sealer" which does not deteriorate with age, and is not

affected by temperature changes.

If a need for a liner unit change should ever arise, the replacement may be accomplished from the front of the freezer. Similarly, the condensing unit may be serviced from the front.

In Amana's new "Centennial" upright freezers, constant sub-zero temperatures are maintained throughout, company engineers



THE 14-FT. LONG piece of heavy-gauge steel is shown being bent into the form of a cabinet for a 19-cu. ft. upright freezer on this Struthers-Wells double-winged tangent bender. Each cabinet receives four bends in 45 seconds.

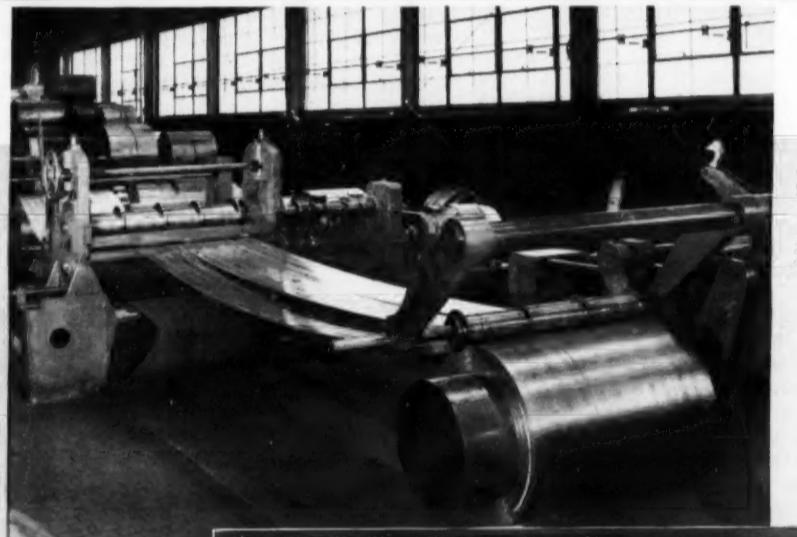
state, with as many as six refrigerated surfaces.

The 15 and 19-cu. ft. models are equipped with four positive-contact freezing shelves, in addition to freezing coils at the top and bottom of the storage space. The 12-cu. ft. model has three refrigerated shelves in addition to coils at top and bottom, and one adjustable wire shelf. Shelf trim is an aluminum extrusion which serves both decorative and structural purposes.

The new Amana freezers are powered by the Powerpact hermetically-sealed refrigeration system, which is sealed at the factory.

Other construction features of the new Amana freezers include: 1) inside liner of the freezer cabinet is firmly attached to the freezer plates, thus making it a secondary freezing element; 2) every freezing surface in the freezer is made of aluminum; 3) the tubing, which carries the refrigerant throughout the freezer, is securely brazed to the aluminum plates in a "single unit" construction.

HERE'S HOW the WEAN Slitting and Flying Shear Line Can Save You 20% On Your Steel Costs



The Wean Slitting and Flying Shear System eliminates this entire processing function by converting steel from coil to production size, at resquared tolerances, at a rate of 100 cuts per minute.

Just figure it out for yourself. Apply these figures to your own operation. Total up the extras you are now paying for steel preparation and you'll see why it will pay you to talk with Wean.

Want to save 20 percent on your steel costs? If you are using sheet steel in any great amounts a Wean Equipment engineer can quickly show you how the amazing new Wean Slitting and Flying Shear Line can effect this savings in your plant. Using your actual figures, Wean can, by a simple comparison method, quickly prove to you that these savings are possible. Why continue operating at high costs when this improved method could be saving you as much as \$20 a ton on your steel?

The secret of these tremendous savings is a short cut in getting steel from coil form to fabrication. If you are not one of those already using the Wean Slitting and Flying Shear Line you are either paying mill extras for shearing to tolerance and size or are forced to do this operation expensively and slowly in your own plant or a costly combination of both.

WEAN EQUIPMENT CORPORATION

Cleveland Chicago Newark, N.J. Detroit


Wean
 COMBINATION
 SLITTING and
 SHEARING
 SYSTEMS

We appreciate the opportunity of cooperating with the Amana Refrigeration, Inc. program.

ASSOCIATED PLASTIC COS., INC.

MIDLAND, MICHIGAN

Putting Salesman in Conversation With Prospect Key to Sales--

(Concluded from Page 13, Col. 1) benefits of owning and using a freezer.

"Right now some of the major stores in this country are doing an outstanding job of selling freezers on the freezer-food plan," Foerstner declared. "It is also heartening to note that some of the big interests in the food merchandising field are beginning to take note of the possibilities of selling greater quantities of foods and creating new customers by 'custom serving' of freezer owners."

Foerstner believes that the home freezer industry has become aware of all of the faults that beset the freezer-food plans and that the errors made in the merchandising of the plans in years past are not likely to be repeated.

Errors of the Past

"The three main things that broke the freezer-food plan boom two years ago were outlandish advertising claims, ballooning of prices so that exorbitant salesmen's commissions were possible, and the failure to make proper credit checks," states the Amana executive.

"The responsible food plan operator realizes that he doesn't have to make unsupportable advertising claims to sell a food plan if he has something sound to offer the public.

"Take for example the newspaper advertising run this year by one of the country's leading department stores to promote its freezer-food plan. See if there's anything which smacks of 'high pressure' or 'come-on' in this copy which says:

A Major Store's Ad

"Here's how you'll benefit from Carson's Amana Plan....

"1. Buy top quality foods for less, because you buy in larger quantities . . . choice meats, poultry and fish, vegetables, fruits!

"2. No tiresome daily shopping trips. No last minute planning when you've a freezer full of foods to choose from at your fingertips.

"3. Enjoy better balanced meals, more variety for the whole family. So convenient, too!

"4. Your food orders are custom prepared. A trained consultant will help you plan your purchases to best advantage.

"5. Choose the Amana Freezer that is best suited for your particular family needs. We'll help you decide which freezer size is the ideal one for you.

"6. Food for your freezer is delivered to your back door. For example, a side of choice beef (55 cents per pound) cut and wrapped ready to go right into your freezer.

"7. Save on seasonal specialties. Buy in quantity when prices are at their lowest."

What's Been Corrected

"The ballooning of prices over the regular list, and the payment of way-over-normal salesmen's commissions have gone out with the elimination of the high-pressure, fast-buck operator, and through better checking by companies concerned with the credit granted on freezer-food plans.

"It always was an error to set prices and commissions that would make the salesman's commission bigger than the down payment, because such practices were sure to lead to abuses, but the industry had to go through the experience in order to learn the lesson."

Readyng a Show



Freezers Part of 'Food Revolution'--

(Concluded from Page 13, Col. 2) centrate on the "food story," Hinchliff declared.

"That's why food plans—which dramatize the food benefits and advantages of freezer ownership—have been successful in building greater sales volume."

Eventually the food aspects of freezer selling will be taken over by the retail grocery, supermarket, and the locker plant, Hinchliff declared, because they know the business best.

"We are in this transition period, now, which will continue until supermarkets recognize that the freezer is by no means a creation designed to cheat them out of their business," he declared.

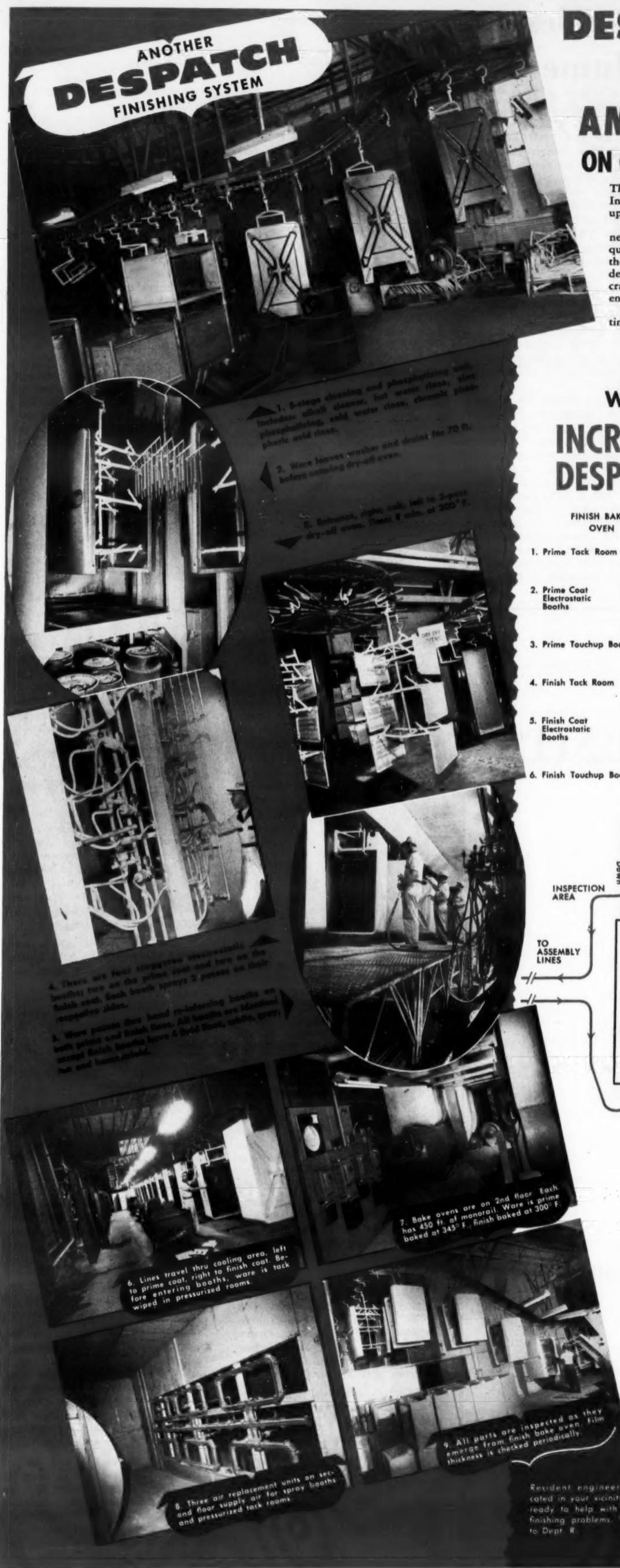
Freezer sales in the future will be paced by the growth of upright freezers, he predicted. With home building costs so high, there is a

premium on space in new homes, and this provides added reason for the space-saving upright. Over the long range, the further development of uprights of increased capacity will depend in large measure on further reductions in the amount of floor space used.

Freezer-Owning Salesmen Sell Bigger Volume

AMANA, Iowa—A freezer-owning salesman is the best freezer salesman. That's the conclusion of W. J. Dickinson, director of sales training for Amana Refrigeration, Inc. He says that a survey has shown that salesmen who have freezers in their own homes sell twice as many units as salesmen who don't own freezers.

"There's no doubt that a salesman who can speak to a prospect from his own personal experience presents a far more effective story for buying a freezer," Dickinson points out.



DESPATCH OVEN COMPANY

Congratulates

AMANA REFRIGERATION, INC.

ON COMPLETION OF A MAJOR EXPANSION PROGRAM

The year 1954 brings to completion a major plant expansion program at Amana Refrigeration, Inc., Amana, Iowa, world's largest manufacturers of food freezers and pioneers of the Amana upright freezer.

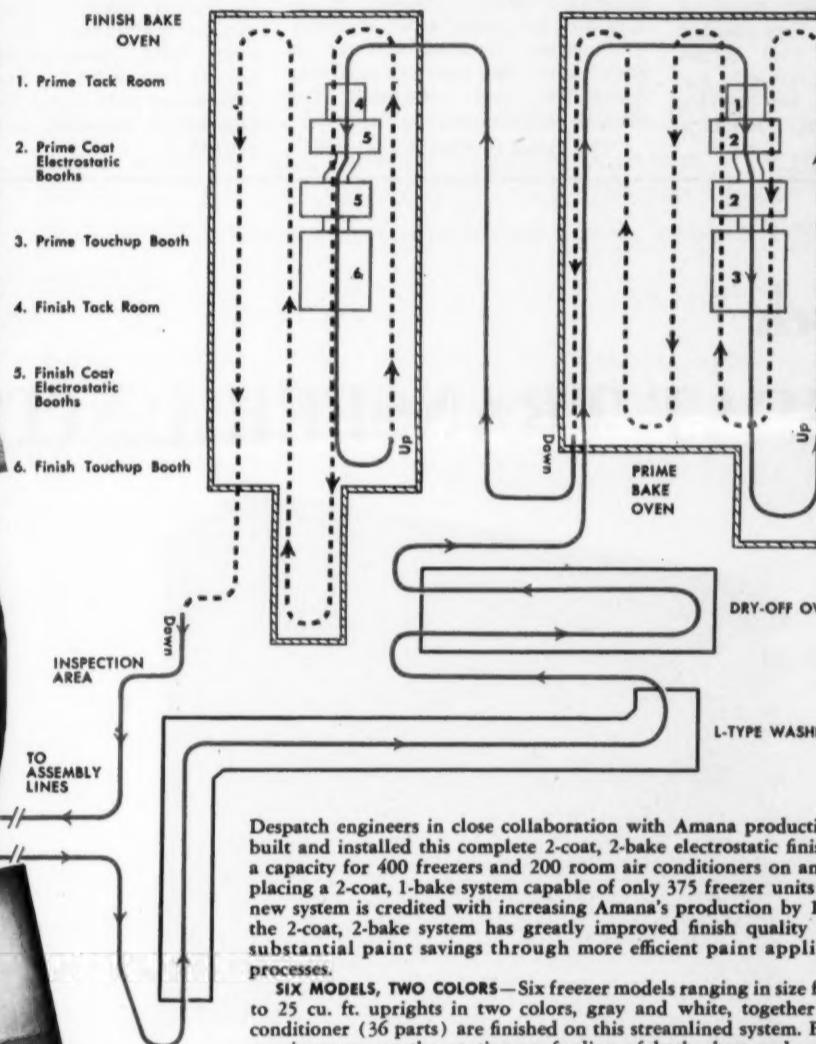
Despatch Oven Company is proud of its part in the production of Amana freezers and the new Amana room air conditioners. A Despatch Finishing System now puts the beautiful, high quality, long lasting baked enamel finishes on these traditionally fine products, and does it with the speed necessary to supply the ever-growing demand for distinctively styled and functionally designed home appliances. We feel honored to have a part in the Amana operation, where craftsmanship is a tradition and where the pride of skilled men is exemplified by strict adherence to rigid specifications and superlative workmanship.

We salute Amana on the completion of their major expansion program and wish them continuing success with even greater triumphs in the years ahead.



World's Largest Manufacturer of Food Freezers

INCREASED PRODUCTION 150% WITH THIS DESPATCH CONVEYORIZED FINISHING SYSTEM!



Despatch engineers in close collaboration with Amana production men, designed, built and installed this complete 2-coat, 2-bake electrostatic finishing system with a capacity for 400 freezers and 200 room air conditioners on an 8-hour shift. Replacing a 2-coat, 1-bake system capable of only 375 freezer units on two shifts, the new system is credited with increasing Amana's production by 150%. In addition, the 2-coat, 2-bake system has greatly improved finish quality, and has achieved substantial paint savings through more efficient paint application and paint processes.

SIX MODELS, TWO COLORS—Six freezer models ranging in size from 8 cu. ft. chests to 25 cu. ft. uprights in two colors, gray and white, together with a room air conditioner (36 parts) are finished on this streamlined system. Freezer production requirements are the continuous feeding of both chest and upright parts for 3 assembly lines. Travelling on a 2700-ft. continuous conveyor, the ware is passed through a 5-stage metal washer, 2-pass dry-off oven, electrostatic prime coat booths and hand touch-up booth, multiple-pass prime bake oven, electrostatic finish coat booths and hand re-inforcing booth, multiple-pass finish bake oven and then thru the inspection area and to the assembly lines. Following metal washing and dry-off, the air conditioner parts are taken from the line for dip coating and returned to the line for touch-up, baking and unloading at assembly points.

Lack of storage space for finished parts limits the inventory to not more than two hours of production. This means a finishing system capable of handling relatively short runs of each model and making the change from model to model with ease. The capacity to finish a variety of model sizes, and in two colors makes this Despatch installation unique and one of the most versatile of its kind in operation today.

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Despatch Finishing Systems are designed and built to finish your product better, faster and more economically. You can get a complete system or individual units, such as:

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Distributors See More Freezer Sales By Dealers, Increased City Volume

DETROIT—A widely-expanding market for freezer sales in the incoming years has been predicted by 13 leading appliance distributors, who say that the next decade will see a steadily-rising growth of home freezer sales.

A majority of these distributors predict that the greatest volume of sales will be in metropolitan

areas. The "general" appliance dealer, they say, will move an increasing number of freezers in the future.

These were the replies by the distributors to the question "What lies ahead for the freezer business?" in a survey conducted by AIR CONDITIONING & REFRIGERATION NEWS:

A 'No Trade-In' Item

W. C. Campbell, manager, Appliance Div., The Parker Co., Denver:

"The future for the freezer industry appears to be as bright as ever or brighter, with continued development of new frozen foods, expanded merchandising efforts, and continued attractiveness of the freezer to dealers.

"Because freezers are 'high ticket' sales, they present none of the complicated installation problems that accrue to most of the other 'growth' appliances. They cause few service problems and seldom involve a trade-in by the buyer.



W. C. Campbell

"From the consumer's standpoint, the home freezer is an appliance giving universal satisfaction. As saturation increases, the freezer industry can expect more and more user recommendation of this appliance, and this counts heavily when a product is one which owners tell you they 'would not want to be without.'

"The trend to upright freezers, which has been particularly dramatic in the last year, seems to be entirely confirmed. It may be that the average size of freezers sold is reaching a point of stability. We now have freezers of some 12 to 19-cu. ft. capacity available for city homes which consume a minimum of space and are of such beauty that they are perfectly acceptable and desirable for kitchen installation.

"The urban market is that which

needs increased selling emphasis, in view of the fact that modern freezers are now well adaptable for use in city homes. The lower city saturation indicates that city populations still do not have a full appreciation of freezer benefits, and the current tendency of city dwellers to suburban living brings into focus the shopping convenience advantage which heretofore has been practically reserved for rural users.

"This being only one of the many advantages of freezer ownership, it becomes the industry's job to keep plugging away at the full range of freezer benefits, to educate users to a full and varied use of the freezer, and to sell adequate size.

"With many areas now facing a decline in household formation, there may be a current economic block to as spectacular a rise in freezer sales this year as the industry has enjoyed for the past five years. But there should be no question that a leveled out volume of freezer sales by the industry can be maintained this year and next, with good prospects for higher unit sales by the industry concurrent with population spread, population increase, and building growth."

Buys Own Food Facilities

W. N. Corpening, president, Old Dominion Distributors, Inc., Richmond, Va.:

"The question of what lies ahead for the freezer business is of course a very deep one; but as I examine it more closely I find that its future problems and future success will be geared very closely to what we do today.

"We at Old Dominion Distributors, Inc., are looking forward to a bright future in this business of freezer sales because we are building on a solid foundation by adding to the power-packed educational program that Amana inaugurated.

"As we educate and sell the versatile uses of food freezers in American homes, sales resistance is lessened. Our present and past experience shows very definitely that the consumer trend in freezer buying is to the larger size upright food freezer. I think without a doubt it is safe to forecast that even larger size freezers will be bought by the consumer.

"Saturation in the freezer industry as in other appliance fields is something everyone fears yet never quite reaches. Without a doubt we have as great a field for freezer sales as we had and still have in household refrigerators. I think that use of freezers will exceed that of household refrigeration as we know it today.

"To back up our faith in the future of food freezers we have recently purchased the Magnolia Locker Plant in Richmond, which is the largest and most modern independent processing plant in the state of Virginia. We are making its facilities and services available to our freezer-food plan operators in Richmond and its surrounding areas."

Dealer Must Awake

Max M. Lipin, Allied Music Sales Co., Detroit:

"The freezer industry has a future as bright as any star in the appliance sky, because:

"1. People everywhere are freezer conscious. Only the fact that suitable financing arrangements for the low income groups have as yet not been made holds up an avalanche of freezer deliveries.

"2. The freezer is the most overlooked appliance in the dealer's store. Not by his customers, but by the dealer himself. If he sells a freezer, in most cases it is because the consumer came in and asked for it, and not because the dealer did a selling job.

"3. People want freezers, and will buy them, just as soon as the salesmen will approach them and ask for the order."

Opportunity in Cities

John T. Spahr, Peaslee-Gaulbert Corp., Indianapolis:

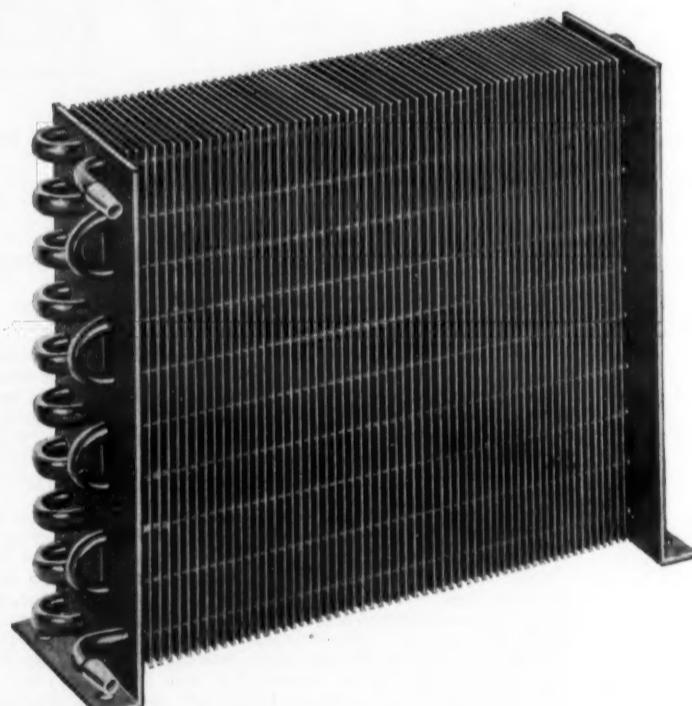
"It appears to me that the greatest volume for the sale of home freezers lies in the metropolitan areas. The active promotions and sales efforts by legitimate food plan operators is bound to stimulate retail sales. Further, the many satisfied home freezer owners will add a stimulant resulting in additional sales.

"All this adds up to an ever increasing number of freezer owners. The trend in our community for the purchase of a freezer is of an economic nature. The homemaker has been told how she can reduce her family food budget and all homemakers are most anxious to accomplish this universal problem.

"It is my opinion the future will prove that a home freezer will be as much a part of the American way of life as the refrigerator, washing machine, and television. Certainly the future is bright for the sale of home freezers."

(Continued on Page 20)

Kirsch HEAT TRANSFER UNITS



- FIN AND TUBE CONDENSERS . . . for static and forced-draft applications.
- PLATE AND MESH CONDENSERS . . . in styles to fit every size cabinet.
- AIR CONDITIONER COILS . . . with aluminum fins and copper tubes.

Kirsch is proud to have been associated with Amana Refrigeration, Inc. in the development of their new upright freezers and room air conditioners.

Refrigeration Division

KIRSCH COMPANY • STURGIS, MICHIGAN



W. N. Corpening

day's dinner, whereas the actual freezing process is an art of its own. More and more consumers are beginning to realize the importance of proper processing and freezing as well as preservation, and eventually we feel it will be impossible to merchandise any type of freezer by name only that is merely a frozen food storage cabinet, not capable of properly freezing the food.

"We honestly feel that quality of frozen foods and convenience of having them in the home has produced more sales consistently than has any economy story that has ever been told. Economy, nevertheless is a big factor, particularly where the customer knows how to operate the freezer as if it were a place of business.

"The saturation point on freezers is just reaching the point where the average customer is interested. This low saturation point stands in Mobile right now at about 10 or 12%. With what we feel is the finest freezer obtainable, and with the dollar and cent sale per unit being the top item in the appliance industry, we look forward to the next 10 years, the most prosperous in the history of this business."

Teach Proper Use

James C. Nelson, Radio Appliance Div., Nelson Radio & Supply Co., Inc., Mobile, Ala.:

"I earnestly feel that the greatest amount of freezer business to be gotten in the future lies primarily in the metropolitan markets. In the farm markets, there have been many more freezers purchased because of the necessity of storing home produced food. The farmer created his own need for a freezer by having food that was going to waste.

"The saturation point of 10 or 12% to date, in this market, primarily is because of the rural communities that were freezer conscious so many years ahead of the metropolitan markets.

"Most future purchases, particularly those in our own area, we feel will be more concerned with quality than ever before. With the proper selling effort the customer can be convinced:

"1. that practically any box smaller than perhaps a 19-cu. ft. size is too small for individual use;

"2. that the best way to effectively save money is through purchase and use of the best freezer available, and

"3. not just a frozen food storage cabinet, as is offered by so many different manufacturers.

"Too many people associate a freezer as a place to store Friday's frozen food shopping until Sun-

Amana Freezers Are Insured a Tight Seal Because of These Two Excellent Products!



Pictured here on the Stor-mor door of the Amana 19-cu. ft. upright freezer is the extruded rubber door gasket which is used for sealing the cabinet. It is an odorless gasket, manufactured to meet close dimensional tolerances and supplied by Sperry Rubber & Plastic Company.

Sperry Rubber & Plastic Company is interested in supplying other industry manufacturers with quality products similar to those used on Amana freezers! Write us for full details.



Syracuse Rubber Products produced the odorless molded breaker collar shown on the Amana 14-cu. ft. chest freezer.

Syracuse Rubber Products has available the engineering experience to help solve your molded rubber problems. Its plant facilities are more than capable of supplying other manufacturers with molded rubber products designed and engineered to exact specifications, and delivered when you want them.

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How Distributors View Freezer Market, Merchandising Future

Sound Food-Plans Now

J. Trevor Peirce, vice president, Peirce-Phelps, Inc., Philadelphia, Pa.:

"The spectacular spread of unsound food freezer plans was perhaps the hypodermic needed to quickly awaken both dealers and consumers to the important part frozen foods and frozen storage have become in our national life.

"We are still going through the depressed stage that always follows the use of narcotics. But, slowly emerging from the mess are some sound and worthwhile food plans which should win confidence and play a vital part in future industry growth.

"In addition, leading appliance dealers and department stores are rapidly realizing that not only are freezers here to stay, but that they represent a tremendous big ticket growth market.

"I am convinced the home freezer has gone through its growing pains. It's taking its deserved place in the home appliance busi-

ness and will start to break sales records as soon as financial institutions again look upon it with favor. And this they will do as the legitimacy of the situation becomes apparent."

Sees 3 Main Outlets

D. C. Cunningham, general sales manager, Major Appliances, Inc., Miami, Fla.:

"As Amana distributors for the past 10 years in the state of Florida, we have worked closely with our dealers in every phase of this tremendously interesting and sound business.

"We are planning a sound, sensible expansion program into every section of our territory, and definitely incorporating the initial stocking of a reasonable quantity of food with the sale of the freezer.

"As we see it, our freezer business for years ahead will expand and increase through three different segments of merchandising: first, by department stores who are now operating exclusive food

freezer departments, working in close collaboration with food distributors; second, by leading food distributors who are now merchandising freezers with special organizations of their own; and third, by quite a number of fine major appliance dealers who are setting up exclusive Amana food freezer sales organizations.

"Dealers everywhere are conscious of the need for new additional departments in their business based on specialized selling that will bring them longer profits."

Features Important Now

Harry S. Harlow, appliance manager, Stratton & Terstegge Co., Louisville, Ky.:

"Future freezer sales will be predominately dependent on the average wage earners' purchases

of this appliance. This segment of our economy is definitely interested in the savings offered by owning a freezer because of limited budgets. Therefore, an item which enables a family to live better for less is enjoying and will continue to enjoy vast acceptance among this class.

"The freezer with customer ap-

pealing features will continue to enjoy the greatest customer acceptance. The importance of these features or gimmicks will grow as more and more of the market is saturated. We believe this reason will run ahead of the many other reasons for owning a freezer, and customer realization of a freezer's advantages will result in complete satisfaction. A systematic follow-up to instruct owners on the use of the freezer in its most efficient manner will pay dividends in referrals to other sales.

"Better than 60% of the families in America today who do not own freezers are definite prospects and we feel we have an expanding market for many years to come."

Dealer Importance Up In '54 Planning

Fred T. Ramsey, sales manager, Ramsey-Bennett Co., Cleveland:

"There is no question but that the food freezer is already an essential part of today's higher American standard of living.

Probably in 10 years, certainly in 15, no one will think of setting up housekeeping without a home freezer anymore than he would think of doing it today without a mechanical refrigerator.

"But getting down to the immediate future, I believe that this year will see a great transition in the business of selling freezers. Heretofore, a very large percentage, if not a majority of freezers have been sold by the freezer specialist. In 1954, not only will a great many more freezers be sold, but the increased business will go to the general appliance dealer,

along with some of the business heretofore going to the specialist.

"The freezer-food plan idea is sound, and has benefited many thousands. However, the day of the 'fast buck' food plan racketeer is over. Only the sound, ethical food plan companies with a long list of happy customers will survive, and there are many, but not as many as the other kind. The appliance dealer should take a special interest in freezers this year, because it is the only appliance on which his business can exceed last year's, despite poorer economic conditions.

"The upright freezer with refrigerated shelves, with large and efficient storage capacity in the door, will be the most popular. This year for the first time the upright will outsell the chest, and a couple of years from now chest type freezers will be harder to find than the old fashioned icebox."

Freezer Sales Could Top All Appliance Volume

J. W. Teubel, vice president and sales manager, Midwest Electric, Inc., Sioux City, Iowa:

"Folks in our vicinity are becoming extremely freezer-minded, and fully appreciate the value of a good home freezer.

"Farmers have been rather conservative in the last few years due to the political change that was made and the market fluctuation, but we believe they realize the savings, the better living, and the need of a freezer in the future.

"We, in this Middle West territory, believe that 1954 and 1955 should be a banner year in the sale of freezers and we are doing everything in our power to promote and build up freezer sales. Freezer sales, during the next few years, should head the list of all appliance sales."

HOW TO SELL YOUR SALESMEN ON SELLING . . .

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by George F. Taubeneck

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J. Trevor Peirce



D. C. Cunningham



Harry S. Harlow



Fred T. Ramsey



DULUX..... Amana

REG. U. S. PAT. OFF.

From the beginning Du Pont "DULUX" White Enamel has played an important part in the growth of the "Amana" Home Freezer. Housewives prefer DULUX because they know:



DULUX is easy to clean—A little warm water and mild soap quickly and thoroughly chase dirt. The exceptionally smooth, hard DULUX Enamel finish offers little opportunity for dirt to "anchor" and collect.

DULUX resists chipping—Amazing flexibility is a characteristic of DULUX Enamel. Metal protected with this Du Pont finish may be bent or dented—and the DULUX finish won't crack or flake off.



DULUX resists grease—Cooking fats spoil the initial beauty of ordinary enamels. DULUX-finished panels can be soaked in a mixture of oleic acid and cottonseed oil for 3 or 4 days—and the finish doesn't soften.

DULUX resists moisture—The baked DULUX Enamel film effectively resists the action of moisture. Were it not for this important DULUX barrier, kitchen steam and moisture would soon corrode and rust the metal.

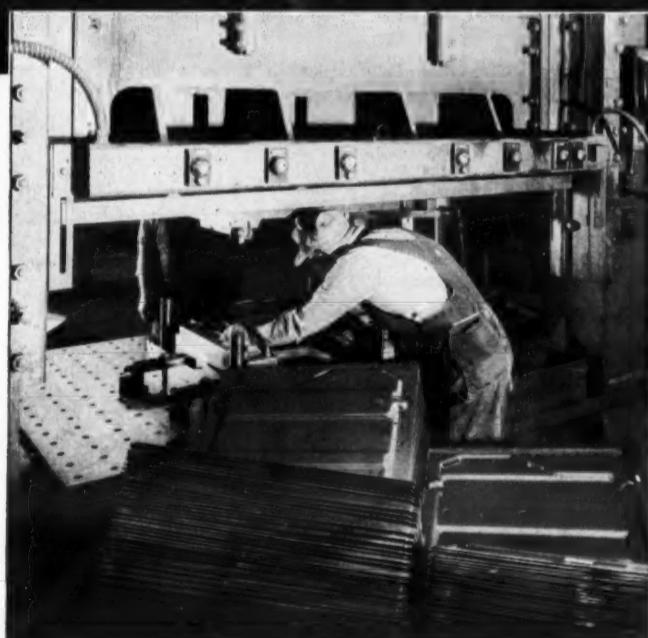


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BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY



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in the expansion of Amana's facilities.**



A Verson Press for every job from 60 tons up.

Prominent in the expanded stamping facilities of Amana Refrigeration, Inc. is the line-up of big Verson presses shown above. Among the biggest in use at Amana, they include four 350 ton full eccentric mechanical presses and a 600 ton hydraulic press. In addition Amana also uses one of Verson's smallest presses, a 150 ton open back inclinable.

Like progressive manufacturers of metal products everywhere, Amana has taken advantage of Verson's press building know-how to assure themselves of quality, efficiency and economy in the production of metal stampings.

The Verson line is complete, comprising virtually all types of presses and tooling. If you make anything requiring metal stampings, it will pay you to consider Verson.

At the left is a close-up of compressor mounting plates as they come from one of the large mechanical presses.



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Freezer Owners Give Their Views

Survey Finds Lower Food Bills Enjoyed by 90%; Savings from Bulk Buying, Convenience Factor Rate High as Advantages

NEW YORK CITY — Lower monthly food bills have been reported by an overwhelming majority of Amana freezer owners, in a recent survey conducted for Amana Refrigeration, Inc.

More than 90% of the group sampled, most of whom have owned freezers for more than a year, reported that they saved money through freezer ownership. Eighty per cent reported a definite decrease in month to month food costs.

56% Said They Saved \$6 to \$35 a Month

Savings from \$6 to \$35 per month were indicated in 56% of the replies, and 10% estimated monthly savings of more than \$36 a month.

Despite the substantial financial savings noted in the replies, the convenience of the Amana freezer was cited by 58% of the group as its greatest advantage to them. Twenty-one per cent named saving money, and 15% listed the ability to store home grown produce the principal advantage.

A majority discovered that the economic advantages of owning a freezer resulted from buying large quantities of meat and other foods, saving and eating leftovers, buying seasonal fruits and vegetables, storing home grown produce, and having on gas, oil, parking lot fees, and carfare because of the fewer shopping trips.

Shopping Trips Cut In Half

Many found their shopping trips cut in half, and 62.7% reduced their shopping trips to four or less per month.

Supermarkets, independent grocers, and farms were listed in a majority of answers as key places where the freezer owners buy food in quantity at a discount.

A total of 27.8% of the group purchased their freezer through a food plan or club. Today, 10.9% buy their food through the food plan, 9.5% through the frozen food store, and 19.3% shop in quantity at a discount at locker plants.

Use of a freezer produced a noticeable improvement in diet for a great majority of the freezer owners. More than 70% stated that they now prepare food and meals in quantity, eat better cuts of meat, have a greater variety of food at meals, bake in quantity, and save leftovers more than before.

More than 92% stated that they eat more seasonal food out of season.

A majority of the group, 65%, represented families of three or more. A total of 30.2% were from family units of two, and only 1.4% of the replies came from persons living alone.

City and suburban dwellers made up 53.9% of the sampling. A total of 20% live in small towns, 19.7% on farms, and 3.7% of the freezer owners queried reported residence in the country.

More Than Half Are City Dwellers

More than 42% of the freezer owners live in cities or towns with more than 25,000 population; 10.5% are in communities of less than 1,000 inhabitants, and 22.4% live in cities of greater than 150,000 population.

Most felt their freezer was of adequate size to meet their family needs, though 13.7% believed their unit to be too small. Only 2% claimed their freezer was larger than necessary.

Of the 295 owners who replied to the survey, 87.4% own upright freezers, 8.8% own chest freezers, and 3.7% gave no answer.

In addition to direct replies to Amana's questions, the group was strong in its praises of freezers and their many advantages. Typical comments were:

"I have a large strawberry bed besides other garden products, and am delighted to have delicious strawberries all winter for our own use and for gifts."

No More Tiresome Menus

"I am alone and appreciate the advantage of not having to eat the same dish several days a week. I like good food and prepare the same dishes as I would for a family. I know it is my balanced diet which keeps me in good health."

"My main reason for buying a freezer was the 40 ducks I dressed and had no way to freeze and store. Since then I wouldn't be without this modern convenience of food planning and freezing."

"Cooking in our household is a chore no longer, when we can do double work in one operation. Can't picture life without our Amana."

"If I had to give up some electrical appliances in my home, my

freezer would be the last one I would let go. Really wonder sometimes how I prepared meals before I had it."

"We have quite a large vegetable garden and freeze our own vegetables. It is much easier to freeze food than to can it."

"My freezer is a source of joy to me, enabling me to entertain my friends and family without being too tired from preparing last minute dishes to enjoy them."

"A freezer is a wonderful boon to a housewife who likes to keep up with a social life."

Permits 'Expensive Tastes On Limited Income'

"We have 'expensive' tastes with very limited income. It is truly wonderful to have delicious meals and party food at budget prices, all because my Amana offers so many opportunities to economize and save food."

"With a freezer I can cut and prepare the meat the way we like it. I make my own dried beef, bacon, and summer sausage, and many other meat dishes that I could not keep otherwise."

"I am able to serve every meal

(except eggs for breakfast) out of the freezer, for 8 to 10 people. No cooking when we have company! Friday through Sundays are all holidays for me because everything has been done weeks ahead."

"Before purchasing our freezer, we had two lockers at the local ice plant which we rented for so much a year. The inconvenience of lockers was one reason we purchased our freezer. If I had to give up some appliance, the freezer is about the last I'd let go."

Here is a summary of replies:

What Type of Freezer?

1. What type of freezer do you own?
Upright—87.46%
Chest—8.81%
No answer—3.7%

What Size?

2. What size?
6 cu. ft.—3.73%
8 cu. ft.—2.37%
12 cu. ft.—20.15%
14 cu. ft.—2.03%
15 cu. ft.—.07%
18 cu. ft.—44.75%
25 cu. ft.—13.90%
No answer—3.4%

How Long Have You Owned It?

3. How long have you owned this freezer?
Less than 6 months 1.02%
6 months to 1 year 4.75%
13 months to 2 years 45.76%
25 months to 3 years 31.86%
More than 3 years 13.22%
No answer 3.4 %

Where Do You Buy Food?

4. Do you now buy food in quantity at a discount from any of the following sources?
Independent grocer: 21.69%
Supermarket: 34.92%
Chain grocer: 11.86%
Food plan: 10.85%
Frozen food store: 9.49%
Locker plant: 19.32%
Farm: 31.53%

How Many Shopping Trips —Before?

5. How many food shopping trips do you estimate you made each month before owning a freezer?
1-5: 16.9%
6-10: 30.9%
11-15: 22.3%
16-25: 10.6%
26 or more: 6.1%
No answer: 13.2%

How Many Shopping Trips —After?

6. How many food shopping trips do you make now each month?
1-4: 61.9%
5-10: 23.6%
11 or more: 1.7%
No answer: 12.8%

Do You Save Money?

7. Do you believe you save money by owning a freezer?
Yes: 90.8%
No: 4.4%
No answer: 4.8%

How Does It Help?

8. Will you check the factors listed below which help you save money by owning a freezer?
Quantity buying of meat: 74.2%
(Concluded on next page)

Perfect Parts . . . Made to Order

ALUMINUM Freezer LINER PANELS and SHELVING by REYNOLDS



Expect More—Receive More—With Aluminum Freezer Parts From Reynolds . . .

Take home freezer liner panels and vertical home freezer shelving for example. Reynolds mass-produces these parts with tubing brazed in position so that it's an integral part of the unit. Furnace brazed, metal-to-metal contact means less tubing, which in turn means lower cost and also gives the ultimate in heat transfer. Freezer panels

and shelves are available in anodized finishes with plain or mar-resistant embossed surfaces. Vertical home freezer shelves are made of Reynolds special high strength aluminum alloys to insure maximum strength and rigidity. Freezer liner panels are shipped flat for savings to you . . . reach you ready for fast, easy assembly.

Expect More—Receive More—With The Help Of Reynolds Fabricating Specialists . . .

For superior freezer parts, as well as for highest quality aluminum refrigerator parts, you can depend on Reynolds Aluminum Fabricating Service for help on your design and engineering problems. Remember—Reynolds offers facilities, skill and experience. Aluminum offers rapid heat transfer, light weight, strength, freedom from rust and stain, attractiveness and economy. Com-

bine the advantages offered by Reynolds Aluminum Fabricating Specialists with the benefits offered by aluminum and be sure of "perfect parts . . . made to order." For full details, contact the Reynolds office listed under "Aluminum" in your classified telephone directory, or write Reynolds Aluminum Fabricating Service, 2053 South Ninth Street, Louisville 1, Ky.

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PROFIT!**
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The funniest and most stimulating book ever written on refrigeration and air conditioning merchandising. Every tested selling idea is illustrated with an hilarious story. Use the ideas and the stories in YOUR business.

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\$3 enclosed Send bill 4-12-54

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XUM

Owners Tell Why They Like Freezers--

(Concluded from preceding page)

Saving on gas, oil, parking lot fees, carfare because of fewer shopping trips: 57.29%. Quantity buying of other foods: 61.7%. Buying seasonal fruits, vegetables: 62.7%. Storing home grown produce: 58.6%. Storing home grown meats, poultry: 38.3%. Saving and eating leftovers: 69.49%. Buying day-old bread: 40.68%. Eliminating former food delivery charges: 13.6%.

How Much Does It Save?

9. Can you estimate how much money freezer ownership saves you each month?

Less than \$5:	6.4%
\$6-15:	28.8%
\$16-25:	17%
\$26-35:	10.31%
\$36-50:	6.10%
\$51-75:	3.39%
More than \$75:	.3%
No answer:	27.5%

What Are Advantages?

10. What is the freezer's principal advantage to you? (Number in order of importance: 1, 2, 3, etc.):

First in importance

Convenience: 58%
Saving money: 21%
Ability to store produce: 14.6%
No answer: 6.4%

Second in importance

Convenience: 26.1%
Saving money: 26.1%
Ability to store produce: 18.3%

No answer: 29.5%
Third in importance
Saving money: 23.4%
Ability to store produce: 13.2%
Convenient: 7.5%
No answer: 55.9%

Present Food Bill—Up or Down?

11. Since you have owned a freezer, has your monthly food bill been:

Higher: 2%
Lower: 80.3%
No answer: 17.7%

How Has It Changed Habits?

12. Since you acquired the freezer, do you:

A. Prepare foods, meals in quantity?
Yes: 70.9%
No: 18%
No answer: 11.1%

B. Save leftovers more than before?
Yes: 72.9%
No: 16.3%
No answer: 10.8%

C. Bake in quantity?
Yes: 72.9%
No: 15.9%
No answer: 11.2%

D. Eat more seasonal foods out of season?
Yes: 92.5%
No: 2.7%
No answer: 4.8%

E. Eat better cuts of meat?
Yes: 79.7%
No: 12.2%
No answer: 8.1%

F. Have greater variety of food at meals?
Yes: 76.2%
No: 15.3%
No answer: 8.5%

G. Is your family diet better?
Yes: 77.3%
No: 11.9%
No answer: 10.8%

Is It Right Size?

13. Do you believe your present freezer is:
Correct size for your needs: 84.4%
Too small: 13.6%
Too large: 2%

Family Size?

14. How many in your family?

1:	1.4%
2:	30.2%
3:	15.6%
4:	22.0%
5:	16.6%
6-10:	11.2%
No answer:	3%

Where Do You Live?

15. Where do you live?
In the country: 3.7%
On a farm: 19.7%
In a small town: 20%
In the suburbs: 22.7%
In a city: 31.2%
No answer: 2.7%

What's the Population?

16. Is the population of your city or town:
Less than 1,000: 10.5%
1,000-5,000: 10.2%
5,001-25,000: 25.4%
25,001-75,000: 10.2%
75,001-150,000: 9.5%
More than 150,000: 22.4%
No answer: 11.8%

Bought on Food Plan?

17. Did you buy your freezer as part of a freezer-food plan or food club plan?
Yes: 27.8%
No: 65.4%
No answer: 6.8%



TELLING and SELLING

A guide to smart advertising and merchandising practices.

This series of articles comprising ideas and principles for the small retail or manufacturing business is written by James D. Woolf, who was for more than 20 years a vice president and director of J. Walter Thompson Co., one of the largest advertising agencies.

By James D. Woolf

You Are Not Boss—Your Customers Are

A survey conducted by Batten, Barton, Durstine & Osborn indicates that more than 98% of the customers polled have never been asked their opinion on how many hours or what days of the week department stores should be open for business.

It would appear from this study that retail stores have paid little or no attention to consumer need.

This in no way surprises me. I have always believed that the wants and needs of management, as against the wants and needs of the people, weigh too heavily in the shaping of business policies.

Not always, of course, but often policy-makers forget the great business truth that the *Consumer is King*.

Years ago a famous lawyer-preacher, Dr. Russel Conwell, delivered a lecture, "Acres of Diamonds," more than 4,000 times to enthusiastic audiences.

Dr. Conwell revealed the secret of how to be successful and make money. His advice was this: "If you want to get rich, find a human need and a way to satisfy it."

He gave example after example of businessmen who achieved success because they were wise enough to study the needs and the wants and the problems of the people and shape their conduct accordingly.

There was once a waitress who founded a successful business because she paid attention to a human want. She served some tapioca to a Boston sailor. She noticed that, after tasting a spoonful, he didn't eat it, and she asked him why. He replied that the tapioca was lumpy.



(She paid attention to customer's wants.)

named it "Minute Tapioca," and before too long it grew into a big business.

A decade or so ago most toothbrushes, sold in the nude in open baskets, were thumbed by customers and thoroughly contaminated. The toothbrush was anything but a sanitary dental instrument.

Then 30 years after the demise of the open cracker barrel, along came a maker of toothbrushes, John T. Woodside, who believed he saw a need in this situation. He stood around in drugstores and asked customers about it. Sure enough, he found a want. Even the thoughtless thumbers didn't like the way the toothbrush was sold.

Jack Woodside might have said to himself, "Let the customer go hang! It's cheaper to sell the brushes the way we do it, and that's the way it's going to be."

But he said no such thing. He thought over the problem and answered the need in two ways: 1) He sterilized his brushes and sealed them in glass bottles; 2) he marked the brushes "Soft," "Medium," and "Hard," thus making thumbing needless.

Today the Dr. West toothbrush is one of the most popular brands in America. I don't know it to be a fact, but I think it's a good bet that Jack Woodside must have heard or read Dr. Conwell's inspiring lecture.

But this column, you may say, is supposed to be about advertising. What has the Batten survey and the Conwell lecture got to do with that? I say to you: **EVERYTHING**.

An effective advertisement consists of two things: 1) A consumer need, problem, hankering; 2) the advertiser's way to satisfy it.

It is next to impossible to sell merchandise or services that the people do not need. They must realize their need, or be taught their need.

The consumer does not always realize his need for certain kinds of things. People weren't conscious of their need for deodorants (Odo-ro-no, Listerine, Clorets, etc.)



(Selling must meet basic needs, realized or not.)

Susan Stavers did not dismiss the sailor's complaint with an indifferent shrug. She made a little survey among her customers and found that all of them, or at least most of them, objected to the lumpiness of tapioca. Young and inexperienced as she was, this waitress was smart enough to understand that the *Consumer is King*.

Here, clearly, was a *need*, a customer *want*. It wasn't smart of the restaurant to impose on the sailor its kind of tapioca. The smart thing to do was to give him the kind he wanted.

So she got busy and ground up a batch of tapioca before cooking it: it worked—no lumps. The next time the sailor came in she persuaded him to try her lumpless tapioca; he did and he raved about it. Not only did the grinding take the lumps out it, but it also made it cook quicker.

Susan Stavers had found the answer to a human need, and she

until advertising woke them up. But the basic need, realized or not, must be there. If department-store hours do not fit into today's pattern of living—or if the question is one you're not sure about—do what the Batten agency did: *ask the people*.

You're not the boss: *the customer is*. Study him tirelessly—his needs, his wants, his hankering, his habits, his way of life. Then try to give him what he wants. Such a policy will put more selling power into your advertising.

CONGRATULATIONS TO

Amana
REYNOLDS METALS COMPANY

Write for your free copy of the new 16-page
"Appliance Parts" brochure

See "Mr. Peepers" Sundays on NBC-TV.
Consult local listings for time and station.



RELY ON REYNOLDS FOR THESE PARTS, TOO!

REFRIGERATOR EVAPORATORS

Reynolds Aluminum embossed and anodized refrigerator evaporators offer unequalled economy and efficiency in rapid heat conduction.

REFRIGERATOR SHELVING

Reynolds Aluminum one-piece color-anodized aluminum shelving provides rigid construction plus a corrosion-proof, chip-proof finish.

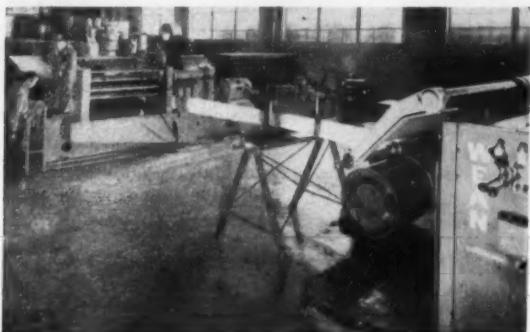
REFRIGERATOR PANS AND TRAYS

Reynolds Aluminum crisper pans and bottle, dairy, egg and utility trays are produced with color-anodized trim to your specifications.

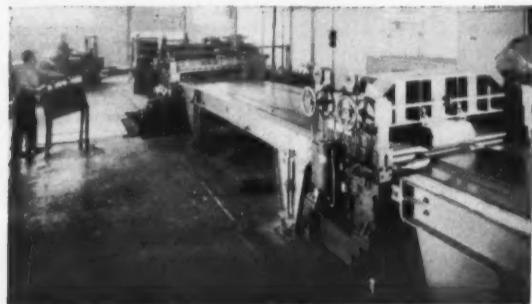
FABRICATING SERVICE

ROLL SHAPING • TUBE BENDING • WELDING • BRAZING • FINISHING

New Facilities Produce '54 Models--



A STEEL COIL IS CUT to desired width on this slitting line. As many as a dozen coils can be cut off a single roll at the same time, and rewound at the right. The slitter handles 90 tons of steel an hour. In the background is the scrap baller which reclaims the cut off ribbons of steel and winds them into 200-lb. balls.



STEEL IS CUT to desired length and leveled in this operation. The steel coil is cut by the Hallden Flying Shear, in the center of the picture. The flat pieces move to the McKay roller leveler in the foreground which improves the drawing quality of the steel. All three operations—uncoller, shear, and roller leveler—are synchronized and operated by the man at the control station at the left. This shearing line handles up to .075 in. thick steel.

(Continued from Page 13)

SHEET METAL AND WELDING DEPARTMENTS

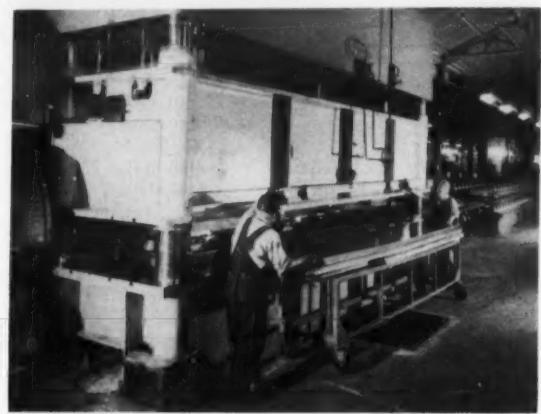
The pieces which have been cut to the desired length and have been leveled for increased ductility then are delivered to the sheet metal department.

There, the many parts now cut to size are drawn and formed into their final shapes. One line, which starts with a 400-ton hydraulic press, designed specifically for Amana by Struthers-Wells, is devoted entirely to the new freezer cabinets.

In one operation this press does all the notching, trimming, and piercing of the 14 1/4-foot long flat piece of steel for the 19-cubic foot freezer cabinet.

This press was designed specifically to handle a piece of steel up to 20-feet long. The die used on the 19-cubic foot cabinet is 16 feet long and weighs 12 tons.

This 400-ton press is operated by two employees, both of whom must hold both hands on starting buttons, as a safety measure. The still flat freezer cabinets feed, at the rate of 75 an hour, onto a roller conveyor leading to a Yoder roll former. The machine's 14 rolls roll on a triple flange on the front of the cabinet and a single flange on the back.



FREEZER CABINETS are notched, trimmed, and pierced on this 400-ton hydraulic press. Designed especially for Amana by Struthers-Wells, the press was designed to handle a flat piece of steel 20 ft. long. The die used on this press to handle the outer shell for the 19-cu. ft. freezer is 16 ft. long and weighs 12 tons. Note that both operators must have their hands on starting buttons in order for this press to operate.



CABINETS FOR UPRIGHT AND CHEST FREEZERS are flanged by the 14 steel roll stands on this Yoder roll former. In this operation, a triple flange is rolled on the front of an upright cabinet, and a single flange on the back.

This machine also flanges outer shells for chest freezers. From the roll former, the pieces are carried on a roller conveyor to a Struthers-Wells tangent bender. Pushbutton operated, this machine bends the long flat piece of steel into the ultimate upright freezer cabinet shape.

After the double wings of the tangent bender complete their job, a tail bender moves up and makes right angle bends on the bottom of the cabinet. This machine inserts four bends in 45 seconds, and can handle 75 freezer shells per hour.

The upright cabinet shell then proceeds to a hydraulic piercing machine, which pierces 30 holes in the triple flange of the cabinet shell, for the attachment of breaker strip molds. This hydraulic piercing machine was designed especially to handle the new freezer cabinet models.

A back then is permanently welded to the freezer's outer cabinet wrapper on a special 38-electrode welder, designed specifically for the new upright freezer line by the Progressive Welder Company. The unit applies two sets of 38 spot welds in less than a minute. Then the fixture on which the

cabinet rests is ejected hydraulically. This welder turns out 75 cabinets an hour. (In former models, 100 machine screws were used to attach the back of the cabinet.)

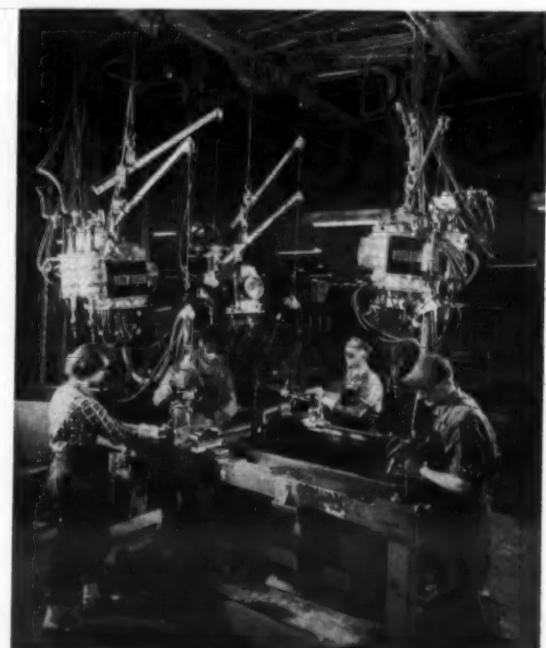
The bottom of the cabinet and all brackets, including feet, mullion, and corner gussets, then are added and permanently attached by 88 spot welds applied by three movable overhead welders, each equipped with two electrodes.

After bolt holes for the door hinges are pierced in the flange of the cabinet, it is inspected carefully for any metal defects before delivery to the paint line for finishing. Any scratches or dents are removed by air grinders or tack wiping in the metal finishing department.

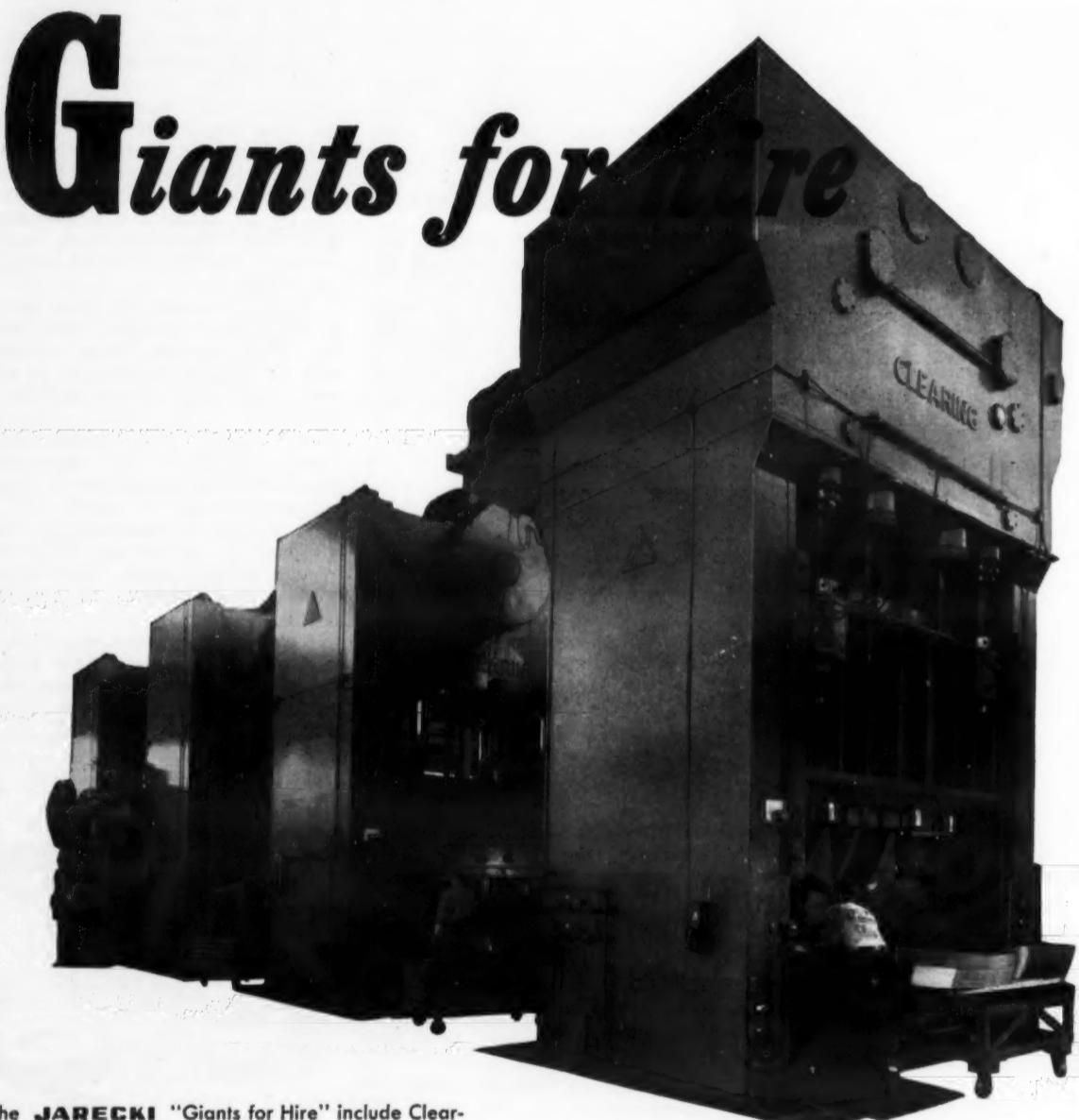
(Amana's automatic, electrostatic paint system is described elsewhere.)

In addition to the 400-ton hydraulic press, there are seven other giant presses in the sheet metal department. One is hydraulic, the others are straight-side mechanical presses. These 200 to 600-ton presses turn out freezer

(Continued on next page)



OVERHEAD WELDERS fasten a bottom, feet, mullions, and corner gussets to an upright freezer cabinet. Nearly 100 spot welds are applied in this operation. Each of the overhead welders is equipped with two electrodes.



The JARECKI "Giants for Hire" include Clearing, Danly, Bliss, Cleveland, Hamilton, Verson, and Niagara presses ranging from 25 to 1200 ton capacity. These presses are capable of producing the largest and the smallest parts used in the automotive and appliance industries.

These giants also contribute to the JARECKI reputation for making dies. Each die is tested on these presses before delivery to the customer.

Expanding facilities soon will make it possible for JARECKI "Giants" to serve new customers. A facilities booklet will be sent upon request.

JARECKI

engineering • tools • dies • stamping • assemblies • plating • painting

GRAND RAPIDS, MICHIGAN



JARECKI MACHINE AND TOOL CO.

Freezer Plant--

(Continued from preceding page) doors, backs, bottoms, mullions, chest freezer outer cabinets, air conditioner shrouds, chest freezer lids, and many other parts.

Forming the door for the 19-cubic foot freezer requires the use of a 26-foot high, Verson 600-ton hydraulic press and four men.

All four operators must have both hands on starting buttons, in order to operate this double action press. It draws a flat piece of steel, 49 ft. x 71½ ft., into the unusual shape of the Stor-Mor door. A special drawing compound is applied to the steel blank before drawing, to help the metal flow into its final form.

The Jarecki die for this operation weighs 18 tons, and is moved around the plant by a 30-ton capacity gas electric truck, equipped with power steering.

After the initial forming operation, the freezer door moves



TO SET UP THE HIGH-SPEED PRESSES to perform different operations, giant Jarecki dies weighing up to 18 tons are moved through the plant on this gas-electric truck. This powerful truck can handle loads weighing as much as 30 tons.



A PARTIAL VIEW of the line of eight high-speed presses in Amana's sheet metal department. The 200 to 600-ton presses are used to draw and form parts for freezers and room air conditioners. Two presses are hydraulic, the rest are straight-line mechanical presses.



CONDENSING UNIT BASES for 19-cu. ft. upright freezers are trimmed all around by this 350-ton Verson press.

through three 350-ton Verson mechanical presses for trimming, piercing, and flanging. Each press turns out 240 pieces an hour. Between operations, the doors "weave" from one press to the next on a 90-foot conveyor.

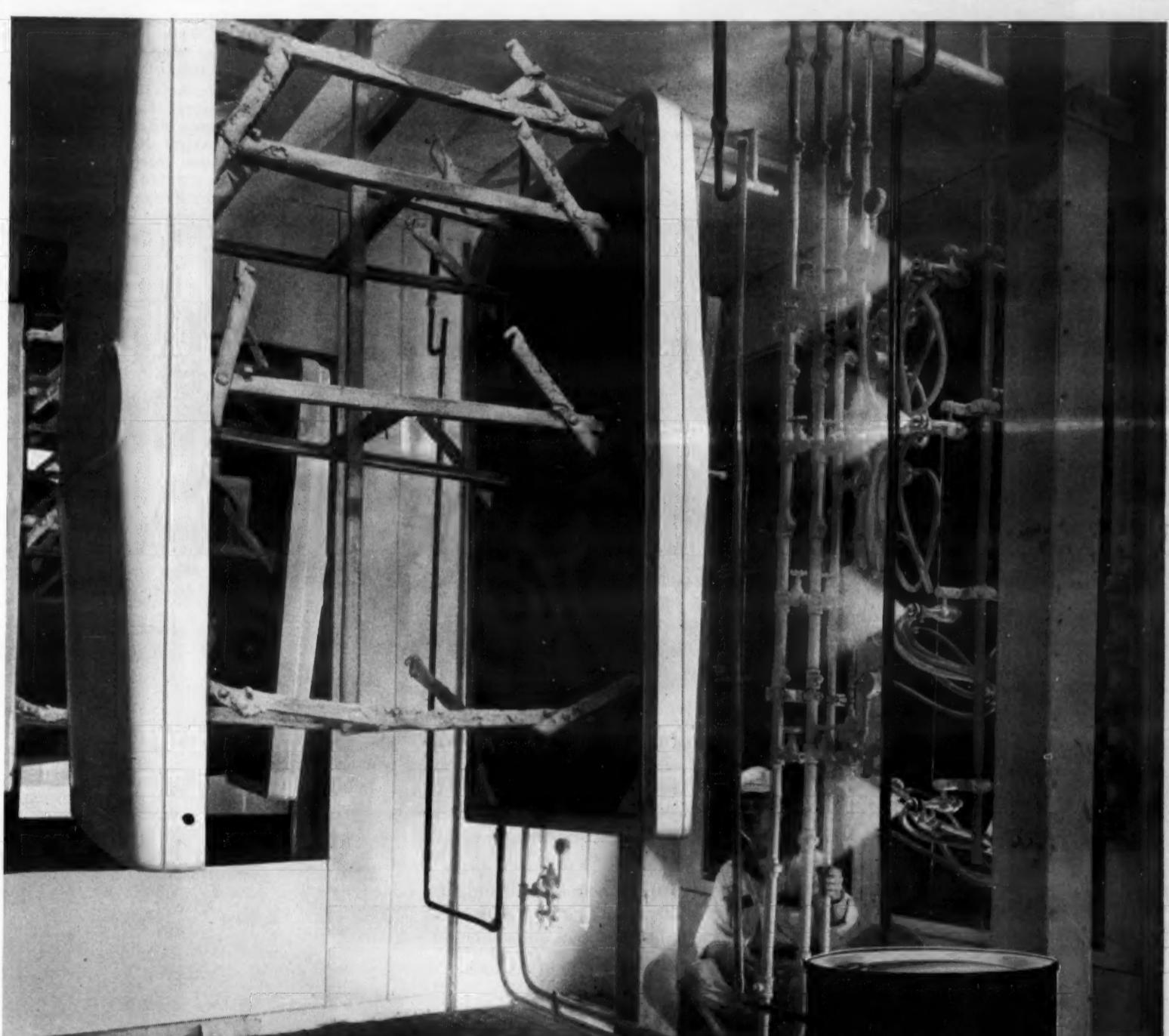
To make certain the door will be absolutely straight, it is "de-bowed" on a special machine built by Jarecki. Eleven holes for mounting the escutcheon are pierced on a Lincoln Tool hydraulic machine, designed by Amana. Then, one of the 350-ton Versons cam pierces holes for the breaker frame screws.

Four corner gussets and latch brackets are welded to the door on a turntable fixture, designed for spot welding at close tolerances. The door then goes to the metal finishing department, before painting, just as the cabinets.

A 200-ton Bliss press cam flanges lids for chest freezers, and blanks and forms a variety of other pieces at the rate of 240 an hour.

In the punch press department, 22 to 150-ton presses bend, form, pierce, form and blank brackets, breaker frame clips, tubing frame clips, gussets, and a variety of other small light-weight brackets required in volume. Each of these 12 presses turn out from 400 to 1,000 pieces an hour.

(Continued on next page)



FASTER FINISHING FOR FAMOUS FREEZER

The completion of a new automatic finishing line at Amana Refrigeration Inc., has given this pioneer builder of upright freezers many finishing advantages.

The switch-over to an electrostatic spraying system speeded production, reduced rejects and eliminated several costly finishing problems.

Many of the recommendations which have proved so successful were made by Glidden Technical Service men. This is consistent with the type of start-to-finish help G. T. S. provides in improving finishing procedures, increasing product quality and lowering finishing costs. Call on Glidden first for all your finishing needs.



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(See page 40 for coupon)

How '54 Freezer Models Are Produced--

(Continued from preceding page)

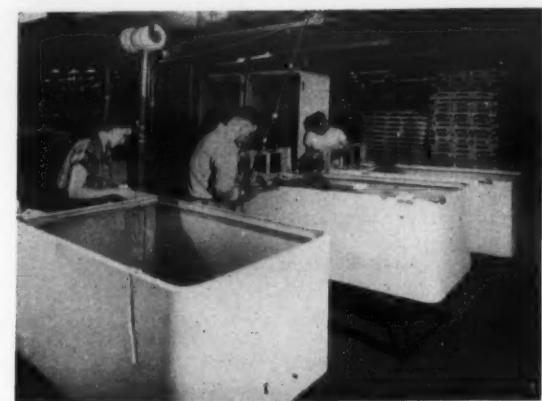
There also is a line of seven press brakes which pierce liner sheets, form tubing clamps, form 90-degree bands in aluminum liner sheets, tops and bottoms, air conditioner evaporator shrouds, partition panels, air conditioner outer cabinets, and other parts.

FREEZER ASSEMBLY

Painted and enameled freezer parts are delivered by a 2,700-foot overhead conveyor directly to the start of the freezer assembly line. Here, the painted cabinet is placed on a tilting cart so it can be handled easily.

The electrical wiring harness, assembled at the plant, is set in position, then secured in place with tape. The cabinet's adjustable feet and the complete temperature control are installed, and a dryer wire to prevent sweating of the outer case is set in place and tested. Nylon bearing hinges also are attached.

The cabinet then is bolted to a skid, which ultimately constitutes the bottom of the freezer's shipping crate, and is placed on a mechanized roller conveyor which is the main straight-flow assembly line. Sub-assembly work proceeds on both sides of the freezer assembly lines, terminating just at the point where the part of sub-



ON THESE TILTING CARTS, the electrical wiring harness, hinges, adjustable feet, and the temperature control are installed. This is the first of the freezer assembly operations.

assembly fits into the principal assembly operation.

In the first of many steps taken to seal the cabinet against the penetration of moisture or air, all of its joints are hot sealed with emulsified asphalt. This odor-free hot sealer, applied by an electrically heated, thermostatically controlled gun, won't run in high temperatures, nor crack or break in any low temperatures where it may eventually operate.

The cabinet then is lined with thick layers of Fiberglas insulation, chosen for its low heat transfer properties. Now the freezer is laid on its back and the freezer liner is inserted from the front, and more Fiberglas insulation is added.

LINER DEPARTMENT

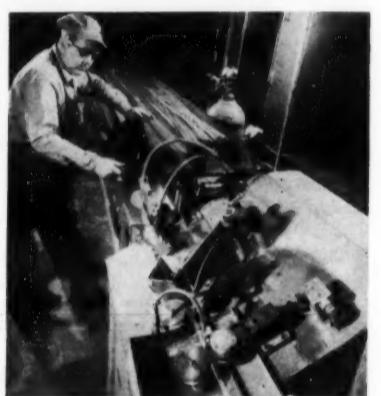
Freezer liners, key to Amana's "contact freezing" system, are made in a separate department that is divided into these three sections: 1) Tubing fabrication; 2) Plate welding; and 3) Main liner assembly.

In the tubing fabrication section, the 20 types of tubing—copper, copper-coated steel, and aluminum—are processed. They are unwound and cut into the various sizes needed—to connect the various stages of the freezer's refrigeration system and to serve as freezing coils. At every point in this operation, the dehydrated tubing is rubber-capped to prevent

(Continued on next page)



UPRIGHT FREEZER CABINET is sealed against the passage of moisture or air by "hot sealing" with emulsified asphalt. All joints are covered.



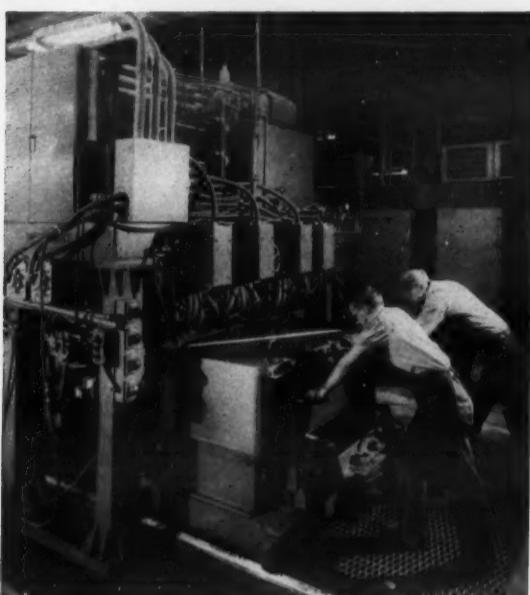
THE TWO ELEMENTS of the heat exchanger, the capillary and suction line, are joined in this operation. After the operator sets the two pieces in position, the machine automatically bonds the two components with soft solder.



FREEZING COILS for top and bottom of liners are formed here. The operator bends a 9-ft. long aluminum tube around a special jig to form the freezing coil. Note the completed, rubber-capped coils in the background.



ANODIZED ALUMINUM TRIM is bolted to the shelves and is delivered to the main liner assembly on this gravity-fed roller conveyor. In the 19 and 15-cu. ft. models, this gold-color trim adds both decoration and strength to the shelves.



THIRTY-EIGHT ELECTRODES of this Progressive welder, built especially to handle the new Amana Stor-Mor upright freezer, attach a back to the cabinet in less than a minute. After two sets of 38 spot welds are applied, the fixture being rolled into position in this picture, is ejected hydraulically. This welder turns out 75 cabinets an hour. (In former models, 100 machine screws were needed to attach the back to the cabinet.)

COLD-ROLL FORMING...

CHALLENGE PROMISE

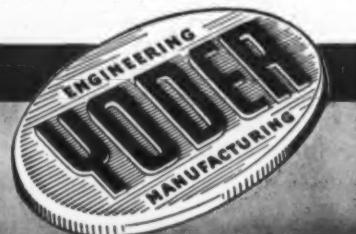
Cold Roll Forming holds a perpetual challenge to your skill and ingenuity in devising new ways to step up production and reduce cost. Infinite possibilities are suggested by thousands of existing applications in the high-production metal working industries.

New applications are constantly being discovered. Total production of Yoder cold roll forming machines now runs into billions of feet annually.

A Yoder roll forming machine can be arranged for doing other operations, such as notching, embossing, perforating, curving, coiling, welding, etc., at little or no extra labor cost. Yoder engineers are at your service in designing such multi-purpose production lines.

The Yoder Book on Cold Roll Forming discusses its varied functions and advantages, with scores of photos illustrating end uses of roll formed products. Ask for it.

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Complete Production Lines

- ★ COLD-ROLL-FORMING and auxiliary machinery
- ★ GANG SLITTING LINES for Coils and Sheets
- ★ PIPE and TUBE MILLS—cold forming and welding





LINERS FOR 12-cu. ft. upright freezers are assembled here. Employees on both sides of this knee-high moving conveyor bolt the shelves securely in position. The liner in the foreground is upside-down, so the tubing underneath the lowest shelf in the picture can be seen.

Liner Production--

(Continued from preceding page) the entrance of moisture into the system.

In one area, the heat exchanger is made on a specially designed machine that solders the capillary and suction tubes together in automatic 35-second cycles. At another point, a 9-foot long aluminum coil is bent around a special jig, forming the freezing coil for the top and bottom of the liner.

Aluminum shelves are converted into freezing plates by having tub-

ing welded to them. Then anodized aluminum trim is bolted to the shelves, for decoration and strength.

Next the liner itself is assembled. A flat sheet of stucco-embossed aluminum is bent on a special machine to form the U-shaped wrapper for the liner. The wrapper is placed on a knee-high, powered conveyor where the shelves are bolted in place.

Then the top and bottom of the liner are metal stitched to the liner. The tubing between the shelves is Heliarc welded together. The liner is completed as the heat exchanger tubing is welded in place.

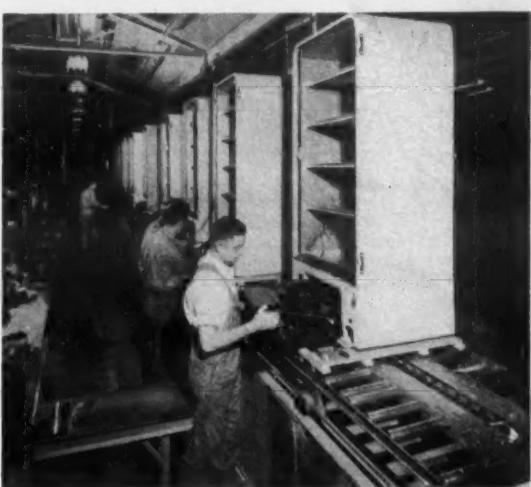
Liners are charged with "Freon" and then leak tested, four at a time, in a fresh air booth—to check the sealing of the liner tubing. The completed liners are delivered to the main freezer assembly lines, just at the point where they are placed in the outer cabinets.

Once installed in the cabinet, the liner is held firmly in position by plastic breaker strips, set in place along the liner's outer edges. The lower sides of the breaker strips have been treated with an asbestos filled mastic sealer, again to bar the passage of air and moisture.

The freezer now passes over the evacuation and charging pit, a 30-yard long concrete trench, deep enough so workers can stand in it without stooping, and comfortably install the compressor unit at the bottom of the freezer.

The wiring harness is connected to the refrigeration unit's motor, all refrigeration tubing is fitted, and the liner assembly is connected to the compressor, so the system can be evacuated. By silver soldering, the suction line of the liner assembly is connected to compressor; and the strainer of

(Continued on next page)



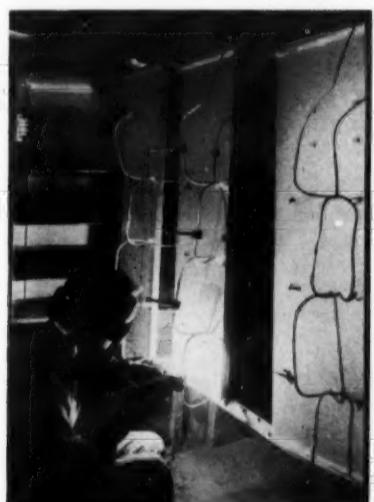
HERE COMPRESSOR-CONDENSER units are installed in upright freezers. The unit now is ready for evacuation and charging. Note that this evacuation and charging pit is constructed so that employees can work conveniently at this lower area of the freezer.



HERE THE FREEZER'S refrigeration system is being evacuated prior to charging with "Freon" refrigerant. All systems are evacuated from both the high and low sides of the compressor, through large tubes connected to a 6-in. copper manifold held at a pressure of less than 15 microns. Three cabinets are evacuated at one time.



TOP FOR A FREEZER LINER is metal stitched to the liner wrapper.



LINER TUBING is interconnected and joined by Heliarc welding. This tubing connects the shelves, or freezing plates.



ALL TUBE JOINTS of the interconnecting liner tubing are tested for leaks in a fresh air booth by means of a leak detector. Presence of "Freon" at the tube joints will give the operator an audible danger signal through the speaker on the right.



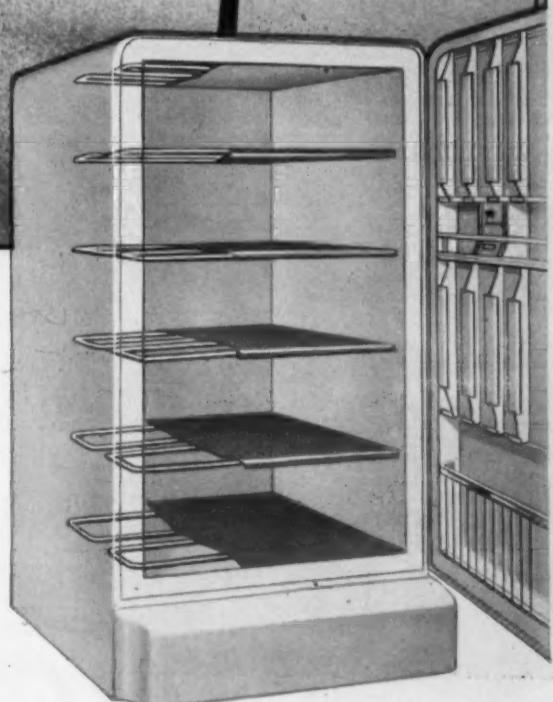
FAMOUS *Amana* "EVEN ZERO" FEATURES achieved with Bohn Aluminum Freezer Plates

The aluminum freezing surfaces—made by Bohn to Amana specifications—provide a uniformly low temperature that assures the safest possible food storage. Seamless aluminum tubing is bonded to the aluminum plate in continuous contact. This provides better conductivity for faster freezing at less operating cost. Bohn aluminum freezer plates are also rust-proof to insure years of trouble-free service, and non-toxic for greater food protection.

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NEW YORK • PHILADELPHIA • ST. LOUIS



AMANA'S six freezing surfaces—made of seamless aluminum tubing and plates—freeze food faster at less cost, provide "even zero" temperature throughout freezer.

Unit and Door Assembly--

(Continued from Page 27, Col. 1)
the liner's tubing is connected and joined to the condenser outlet.

Now the entire refrigeration system, condenser, compressor, and tubing, is evacuated for seven minutes, at a manifold pressure of 40 microns absolute P. Three cabinets are evacuated at one time.

CHARGED, THEN TESTED

After the joints are crimped, pinched off, and brazed, the units are charged with "Freon-22" by an operator using a pushbutton automatic charging cylinder.

To make certain all condensing unit joints are perfect, and that none of the "Freon" refrigerant is leaking, the unit is electronically leak tested in a special booth that is supplied with fresh, outside air.

A leak is detected audibly by interrupting the steady signal omitted by the testing device. Only units passing the leak test are passed on to the next stage of the assembly operation.

Fiberglas, with an extra-high resistance to heat transfer, is packed around the breaker strips to complete the insulation.

The green plastic breaker frame, made of high-impact polystyrene, now is set in place, the door latch is applied and the cabinet is virtually complete—except for the door. The cabinet moves to this final assembly operation, and the Stor-

Mor door is hung in position. It is fitted to the cabinet by means of a special adjusting rod built into the door.

The door seal is checked by pulling through a thin metal strip. If it passes through too easily, the cabinet must be adjusted before it moves on.

DOOR ASSEMBLY

Freezer doors are assembled on a line which parallels the main freezer assembly lines. The painted outer door is placed on a waist-high belt conveyor that moves at a speed of 54 feet an hour.

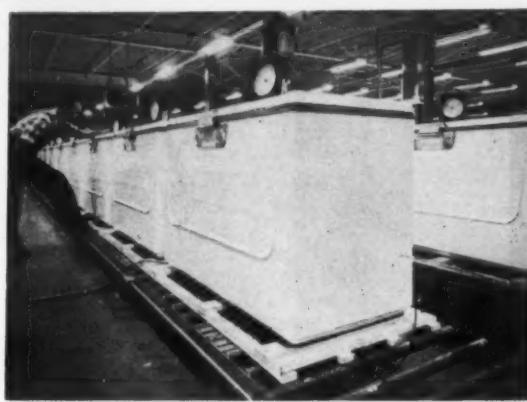
Workers on both sides of the conveyor first install the door wiring harness and seal it; insert the latch mechanism; attach the front escutcheon and secure it with Tinerman fasteners.

Masonite blocks are attached at two corners of the door, to space the inner and outer doors, to serve as thermal barriers, and to hold the door's adjusting rod.

Thick Fiberglas insulation is inserted. Then the adjusting rod is placed diagonally on the Fiberglas, connected to the Masonite blocks. This rod is adjusted later to make possible a perfect fit between door and cabinet.

Then, the steel inner door assembly is added. This inner door is already equipped with shelves, racks, and trays. More Fiberglas

(Continued on Page 29, Col. 1)



EVERY CHEST FREEZER IS CAREFULLY TESTED. In this picture the recording thermometers on top of the 14-cu. ft. chest type freezers register a complete picture of every unit's performance. Models which fail to perform up to the standards set by the engineers are taken off the test line for rechecking of vital points.



DOORS ARE ASSEMBLED ON THIS BELT conveyor which parallels the main freezer assembly line. Each door moves in its own cradle on this conveyor. In the foreground the door's wiring harness is being sealed in position. Further down the latch mechanism and front escutcheon are attached.



DOORS ARE ASSEMBLED ON THIS BELT conveyor which parallels the main freezer assembly line. Each door moves in its own cradle on this conveyor. In the foreground the door's wiring harness is being sealed in position. Further down the latch mechanism and front escutcheon are attached.



LINER IS FIRMLY SECURED TO THE FREEZER CABINET in this operation. Plastic breaker strips are set in place along the liner's outer edges then machine screwed to the liner and the cabinet. The white lines along the lower sides of the breaker strips are an asbestos filled mastic sealer, applied as another sealing precaution.

ADJUSTING ROD, WHICH MAKES POSSIBLE securing perfect fit between door and cabinet, is attached, as shown in this operation, over the heavy insulation in the door.



ADJUSTING ROD, WHICH MAKES POSSIBLE securing perfect fit between door and cabinet, is attached, as shown in this operation, over the heavy insulation in the door.

Louden 10-ton crane handles bundled and coiled steel

IN NEW AMANA PLANT

It goes without saying that Amana Refrigeration, Inc., chose with utmost care the equipment that makes up their production and handling processes in their greatly expanded plant. It should be of extreme interest to any man contemplating similar plant construction that Louden monorail and crane equipment was chosen for this plant.

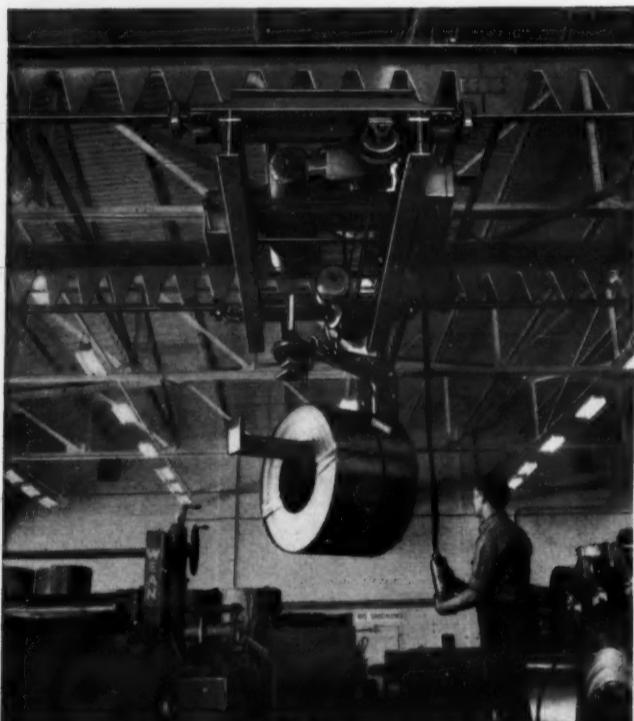
The Louden installation at the Amana plant consists of a 74-foot, 10-ton variable speed motor-driven crane with three runways. This system is used to unload and store 5-ton bundles of sheet steel and up to 7½-ton coils of steel, and to deliver this steel as well to shears and forming machines.

Louden is the pioneering company in overhead handling equipment. As such it places at your disposal not only a complete range of overhead handling equipment but a wealth of experience that will serve you well in solving your handling problems. Consult this experience before you carry your plans any further.

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Latest vital information for every beginner in refrigeration. Gives the expert a handy, pocket-size reference on important facts. Seventy-eight illustrations, 17 tables in this 112-page book give you the facts quickly and easily.

Chapters on Theory, Principles, Properties of Refrigerants, Refrigerant Cylinders, and many others. Indexed for easy reference.

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Freezer Assembly-

(Continued from preceding page)

insulation is added. The green high-impact polystyrene plastic breaker frame, with the sturdy rubber gasket attached to its outer edge, is screwed to the outer flange of the door.

On the main assembly line, two important tests are administered after the door has been hung on the cabinet. To check that the insulation of the freezer's electrical system won't break down, 900 volts of electricity are applied—much more than the freezer would ever encounter in normal operation. This is called the high potential test.

Then to test the over-all effectiveness of the cabinet system's sealing, the air test is performed. When only a small quantity of air must be introduced to maintain a specified pressure, the effectiveness of the sealing is indicated.

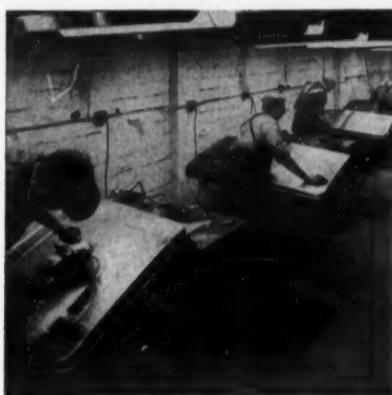
(Continued on next page)



LOWER DOOR for a 15-cu. ft. freezer is drawn on this Verson 600-ton triple-action press. This is the first of four operations necessary to complete this lower door. The press turns out 200 such pieces every hour.



ONE OF MANY PRECAUTIONS taken to insure that the freezer will give trouble-free performance is this high potential test. Nine hundred volts of electricity are applied between the electrical system and the cabinet to make certain that the insulation of the unit's electrical system won't break down.



ON THIS METAL FINISHING line, any dents or scratches are removed from freezer doors and cabinets. Even the slightest imperfections are removed by disc and belt grinders, operated by skilled craftsmen, before the piece is painted.



STEEL INNER DOOR is bolted securely to the outer door, anchored on thermal breaker blocks, to insure best possible door performance.



LOWER DOOR is attached to upright freezer assembly, covering the condensing unit. The plastic dividers for the "Stor-Mor" door are contained in a carton taped securely inside this lower door.

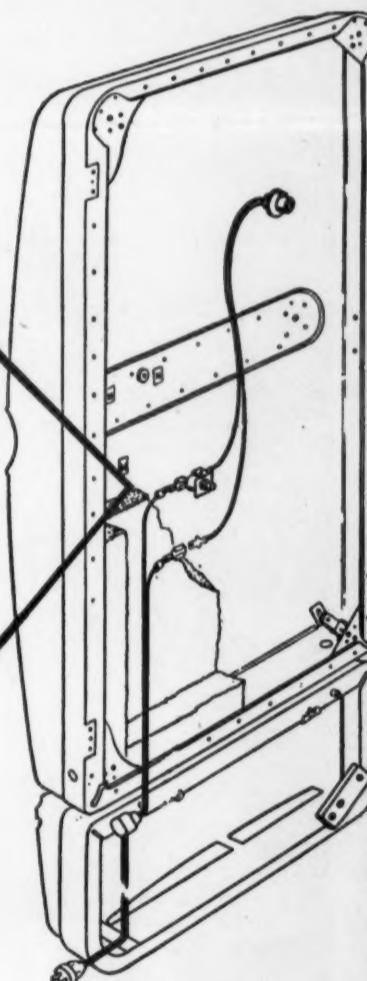
Congratulations to the *Amana*

1954

Amana

FEATURED

The new Amana freezer door design featured in this issue of *Air Conditioning & Refrigeration News* is typical of the progressive engineering throughout the new 1954 Amana. Unilectric has been chosen to supply wiring systems for Amana Freezers since 1947.*



100%
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UNILECTRIC WIRING SYSTEMS

*SAVE MONEY for AMANA and 63 other brands of freezers and refrigerators. Also for 50 brands of commercial refrigeration equipment.

*Can REDUCE YOUR WIRING COSTS through LOW ORIGINAL COST — DEPENDABLE DELIVERY — GUARANTEED REJECTION-FREE QUALITY.

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Manufactured by
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405 South 6th Street • Milwaukee, Wisconsin

Tests, Shipping Methods Aim To Get Product to Dealer In Best Possible Condition

(Continued from preceding page)

The entire freezer is now cleaned with a special compound, and the lower door which covers the refrigeration unit is attached. The plastic dividers for the Stor-Mor door, in which frozen food packages are stored one on top of the other, are packed inside this lower door.

The freezer is then ready to move on to the final testing department. Every freezer is run for 90 minutes, during which time a recording thermometer connected to the shelves and different points inside the unit gives a complete picture of the freezer's operation.

Cycling of the refrigeration system is checked, temperatures at different points must conform to rigid, sub-zero standards, and the thermometer in the door is verified.

Finally, a second leak test on the over-all cabinet, and condensing unit joints, is performed. This is a final inspection for any leaks of refrigerant that may have seeped into the insulation. Any minute trace of the refrigerant

(Concluded on next page)



TO INSURE AN air tight seal, each cabinet is tested with an air pressure system. (This is a check of the cabinet seal, not of the refrigerating system.) Static pressure and entering air pressure must read within specified limits or the freezer is rejected.



FOLLOWING EVACUATION of the entire refrigeration system of an upright freezer, at a manifold pressure of less than 15 microns, it is charged with "Freon" refrigerant by means of positive volumetric displacement equipment shown here. Exact charge of refrigerant required for each type of system is metered into the system.



FINAL TEST for possible leaks, the third to be given each unit, is performed on the final inspection line. Any minute trace of "Freon" refrigerant found with the use of the electronic leak detector, causes the entire freezer to be rejected.



HERE A 12-CU. FT. upright freezer is being pushed onto crating line. The skid on which the freezer stands, and which has served as its base throughout the assembly operation, will constitute the bottom of the unit's shipping container.



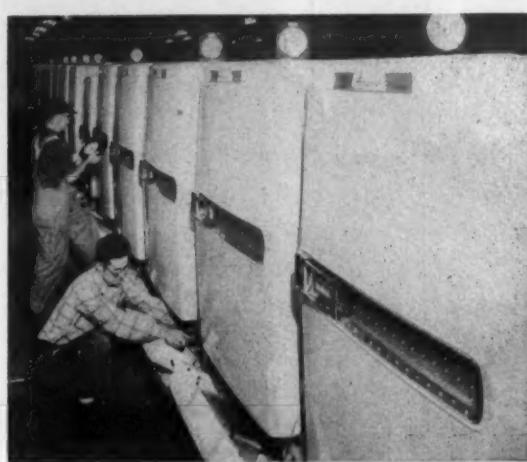
CRATED FREEZERS and room air conditioners are neatly stored in the new warehouse, pending shipment. They are then loaded directly onto freight cars which run through the building on a special railroad spur line. Mixed carloads are readily made up in this type of shipping procedure.

AGAIN **Amana**

AMERICA IS SOLD ON Amana ... SO-SELL Amana



CRATING IS DONE in area next to loading dock. Back of the crate is attached to a special clip on the back of the freezer itself. Here the other sides of this shipping crate, made by Atlas Plywood Corp., are nailed into place. Each point of possible stress or strain is carefully protected.



A COMPLETE PICTURE of the performance of every freezer coming off the assembly line is registered on the recording thermometer on the top of each unit. Each freezer is run for 90 minutes, then "pull-down" time, cycling, and the temperatures at different points inside the freezer are recorded on these instruments.

Freezer Plant--

(Concluded from preceding page) causes the entire freezer to be rejected and returned for adjustment of the fault. To eliminate any moisture or odor that may have been picked up in the assembly or inspection process, each unit is dried for 30 minutes.

At the end of the assembly line, located in the end of the plant adjacent to the loading docks, the freezer is ready to be crated. The skid on which the unit has moved through assembly and testing operations serves as the bottom of the crate.

The back of the crate is bolted to a special clip on the back of the freezer itself. Then the other sides of this shipping crate, manufactured by Atlas Plywood Corp., are hammered into place. Every point of possible stress or strain is carefully protected.

The crated freezers are moved from the end of the assembly line by a lift truck and loaded directly into railroad freight car or truck, or stored in the warehouse to await shipment.

Raw Material for Year Is In 'Million' Figures

AMANA, Iowa — The Amana plant has a healthy appetite for raw materials.

In a year's time it will consume: 24,000,000 lbs. of steel 4,000,000 lbs. of aluminum 24,000 ft. of copper, steel, and aluminum tubing 26,000,000 board feet of Fiberglass insulation 200,000 gals. of paint and enamel.

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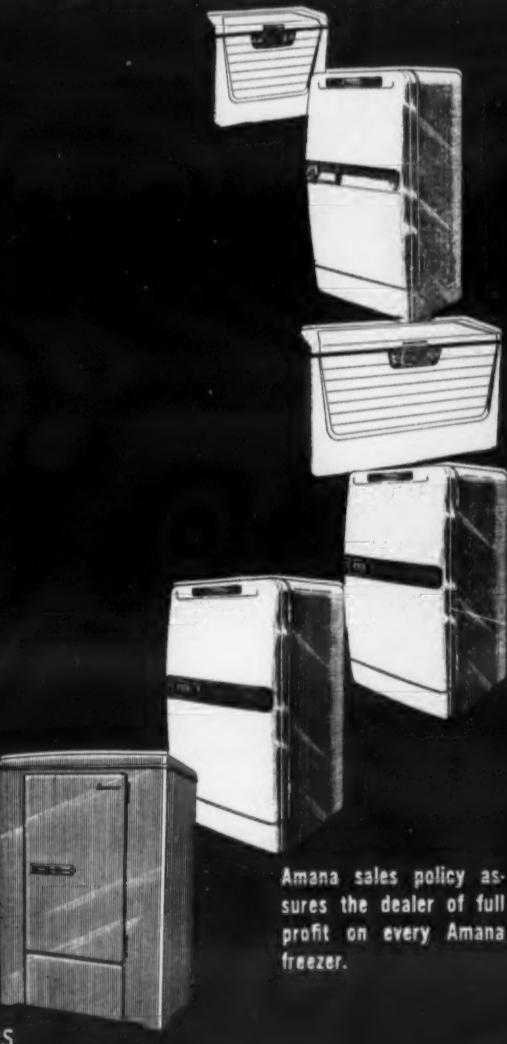
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4-12-54

The "stor-mor" MODELS!

AMANA is the first to offer you the "stor-mor" door. This unique door is the result of years of research and development. It is the answer to your needs for a more efficient, more convenient home freezer.

A complete line of freezers from 8 to 25 cubic feet, competitively priced from \$289.50 at retail.



Amana sales policy assures the dealer of full profit on every Amana freezer.

ALL THE PRE-TESTED FEATURES THAT CUSTOMERS FAVOR IN THE FREEZER GUARANTEED TO OUTPERFORM ALL OTHERS!

THE "stor-mor" DOOR . . . exclusive with . . . THE "stor-mor" FREEZER

- The Amana "stor-mor" door. World's most convenient home freezer door. Holds over 116 packages and cans . . . more than 80 pounds of food. (Model 19)
- Adjustable food holders fit any standard size food package, and hold them firmly in place. They are space savers, because they allow full storage.
- Features AUTOMATIC INVENTORY CONTROL . . . the first package stored is the first package served. Eliminates the need for food records.
- Automatic, full-vision light that floods both door and interior.
- Plus a wealth of other exclusive Amana features that will keep Amana "first" . . . and you, freezer headquarters for your neighborhood.
- Amana freezer franchise . . . Guaranteed to outperform all others . . . in product, in advertising, in merchandising, and in profits!

AMANA REFRIGERATION, INC., AMANA, IOWA
WORLD'S LARGEST MANUFACTURER OF FOOD FREEZERS



New Production Tools Lighten Tasks, Boost Daily Assembly Figures



WORKING SIDE-BY-SIDE on many of the precision jobs in the new Amana plants are men and women production workers. New production tools make many of the tasks faster and easier. Here on a special door welding fixture, four corner gussets and the door latch bracket are welded firmly into position.

Movie, Drugstore Tie-In Proves Hit In New Promotion

LOS ANGELES—Excellent results of a recent promotional tie-in by Amana Freezer Distributors here with RKO theaters and the Owl Rexall Drug Co. have been reported by Jack T. Powell, head of the distributing firm.

"We feel that the promotion the freezer received was the best advertising 'buy' we have made in a long time," Powell said.

A 16-cu. ft. Amana upright freezer was offered as grand prize in a word building contest based on the movie title, "The Glenn Miller Story."

The freezer was given a prominent spot in an RKO-sponsored film trailer announcing the contest, that was shown five times daily in the local theaters. Freezers also were displayed in two theaters and were viewed by about 70,000 people, Powell said.

The freezer was featured on banner displays in 100 drugstore windows. Owl Drug announced the contest in 38 neighborhood newspapers and plugged it in a series of full page advertisements in metropolitan newspapers.

More than 100,000 entry blanks were distributed by Owl Rexall. Contest requirements called for the largest number of words made from the letters of the movie title. The winner listed 16,415 words.



A MYSTERY MODEL? Could be, because in the caption furnished with the picture it states that it is "just one of tomorrow's freezers being placed under wraps." It is flanked by two current upright freezer models in the Amana line.

Cash for Leads Helps, Too

Food Plan Program Sells the Freezer as 'Tangible Item Sold In Intangible Way'

SAGINAW, Mich.—Plans for an expanded promotion program for home freezers in 1954, with an expected sales increase of about 70% over last year, have been announced by John J. Appleby, sales manager for the Skyway Food Bank here.

Claiming Skyway to be the "only complete freezer food service in the country," Appleby reported the food bank operation sold 178 units in five months in 1953.

Skyway, which proposes to "sell the food club plan treating the freezer as a tangible item sold in an intangible way," sponsors daily radio broadcasts from the store and provides a half-hour Saturday night program of country music each week. Amana freezers are featured.

The plan's closing ratio is said by Appleby to be running at a rate of seven out of 10.

Special features of the Skyway operation include a "supplemental

food service" which provides monthly home deliveries to members on food orders from 50 cents to \$25. Handling only top grade foods, Skyway offers the home deliveries "for service reasons mainly, and for creating referral leads from present members," Appleby reported.

Results of this policy have resulted in 60% of the firm's sales developing through referral leads. Members are paid \$10 in cash or in trade coupons for new members signed through them.

Food plan on the instalment plan is provided through the aid of the Second National Bank in Saginaw. Food is financed for a six-month period and freezers for two years.

Promotion activity is also carried out by Skyway's advertising agency and through daily spot advertising on the radio. An informative booklet on the complete operation is offered consumer for 10 cents.



INDICATIVE OF SOME OF THE MASS of material used in the production of freezers in the new Amana plant are these aluminum freezer shelves, stacked up and ready to move to the assembly line to begin liner assembly operations.

For Precision Molding of ALL Thermo-Setting and Thermo-Plastic Materials

JOHN MACK & SON MOULDED PRODUCTS, Inc.

We're proud to be a supplier to Amana Refrigeration, Inc. of three molded plastic parts which are contained in Amana's new Stor-mor upright freezer!



Pictured here are the orange juice shelf, made from high-impact polystyrene . . . the lens and housing, made from high-heat polystyrene, which gives a 3-dimensional effect to the Amana Stor-mor freezer door.

MANUFACTURERS—If you want quality Injection Molding up to 16 oz., or Compression Molding up to 200 tons, Contact Us Today! We're also specialists in Nylon Molding and in making Precision Plastic Molds.

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quality products help Amana grow

Kawneer is helping Amana grow by offering its production skill to produce quality products. Food freezer door shelves and grills for room coolers are Kawneer contributions to Amana.

Kawneer's standards of quality are well known in the air conditioning and refrigeration industry. In addition to Amana, Kawneer supplies materials for General Electric, Norge, International Harvester, C. V. Hill, Admiral and others.

Kawneer can produce wire products, shelving, grills and other miscellaneous stamped parts. We have complete facilities for fabricated parts and assemblies. Kawneer is famous for quality, color anodizing and alumilizing.

Let us help you maintain production of quality products. Call, write or wire. A sales engineer will gladly discuss ways the Kawneer Company can help you.

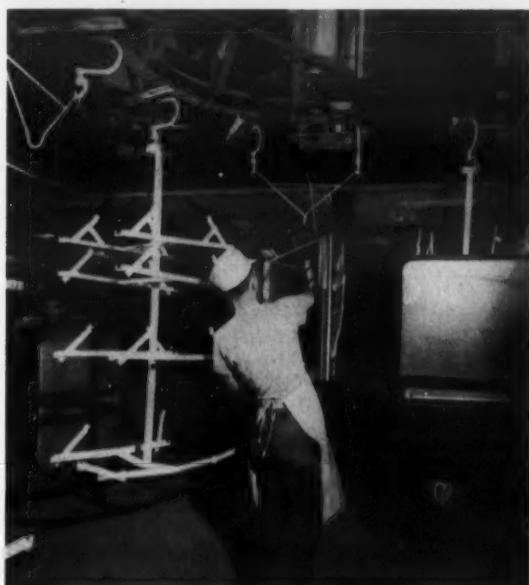
Kawneer

Lexington, Kentucky
Niles, Michigan

Plant Operations Aimed for Speed, Improved Product



LIFT-OFF HINGE of the nylon bearing type makes the job of hanging the Stor-Mor door a relatively simple task. Once the door is set in position, as is being done in this picture, only the door light needs to be connected. Lift-off type hinge is helpful in moving freezers in and out of homes, and in servicing operations.



BETWEEN RUNS OF FREEZERS, an outer cabinet for a room air conditioner is hung on conveyor leading to finishing process. Automatic process permits mixing of products.



AS COMPLETED FREEZER ROLLS along at end of assembly line, plant officials often take time to make their own "final inspection." Here Kermit Bridgeford, production manager, and George Ehrmann, assistant production manager, look over the door and finish on some uprights.



NEAL STEWART, paint superintendent, examines the automatic spray guns, which reciprocate in a vertical plane, and spray perpendicularly to the conveyor through ionizing electrodes.

A&P, Kroger Reorganize Frozen Food Sections

NEW YORK CITY—Kroger has shifted frozen foods from canned goods' supervision to the dairy department and A&P, in at least three of its divisions, has transferred control of frozen food sections at the store level from the produce department back to the grocery department, according to recent reports.

Trade sources speculated that the A&P move was prompted by dissatisfaction with the work of produce managers in merchandising frozen foods. Another guess was that the chain made the shift because more help is available in the grocery department than in the produce section to restock cabinets. The A&P action reportedly does not involve any change in cabinet location.

The shift at Kroger was within the grocery department, the chain's dairy section being under that department's supervision.

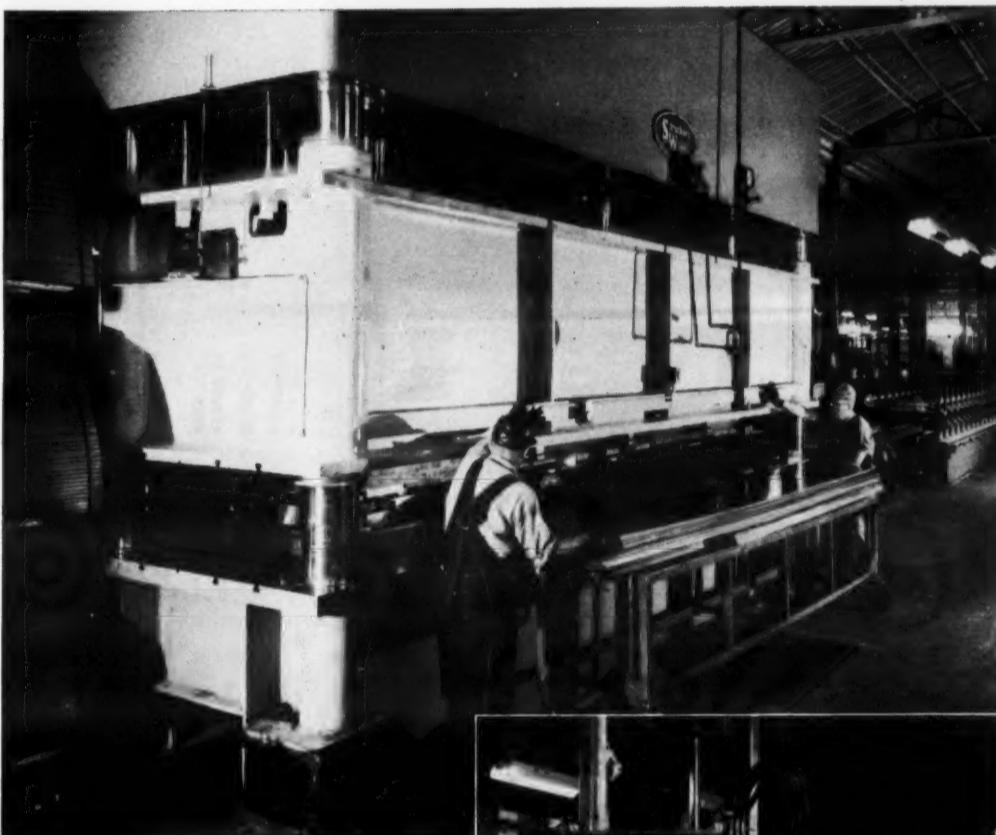
Neenah, Wis. Adopts Law Aimed at 'Death Traps'

NEENAH, Wis.—A new city ordinance prohibiting persons or firms from abandoning or discarding iceboxes, refrigerators, and other air-tight containers which cannot be opened from the inside without first removing the doors or latches was adopted recently by the Neenah city council.

First offenders will be fined \$10. Subsequent violations will cost \$25. In default of payments, violators may be jailed for not more than 30 days.

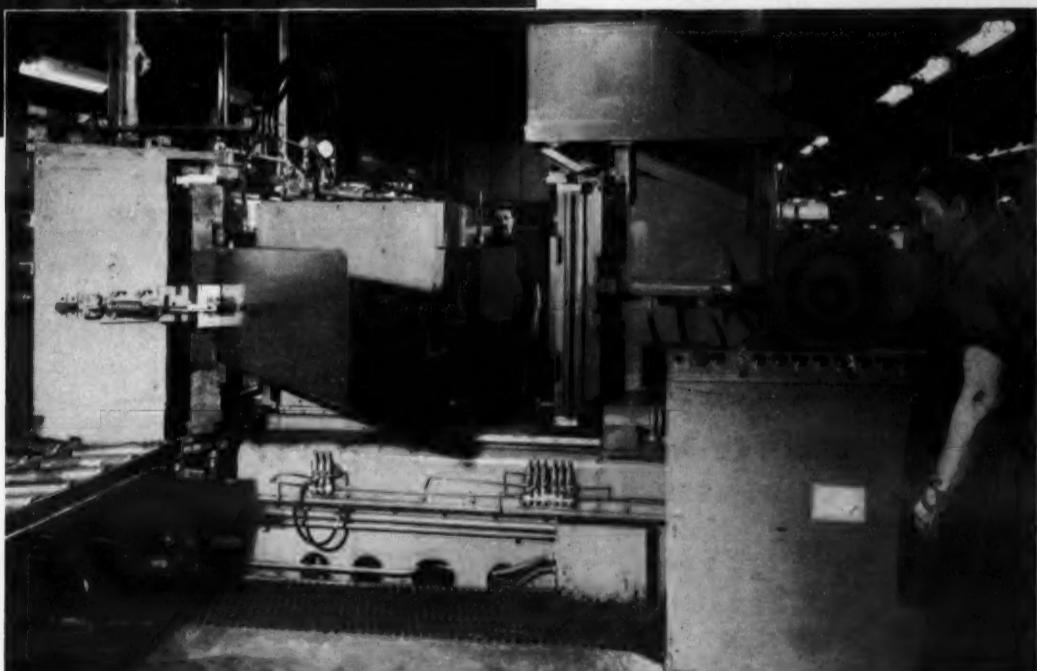
**Struthers
Wells**

SERVES Amana



Rapid, low-cost production of cabinet shells for AMANA upright freezers is provided by this
**STRUTHERS WELLS
400 TON
HYDRAULIC PRESS**

and
**DOUBLE-WING
TANGENT BENDER
with Auxiliary Bender**



Struthers Wells sheet metal forming equipment cuts costs and speeds freezer wraparound production for Amana Refrigeration, Inc. Sized sheets are notched and punched for hinges and mounting holes by a 400-ton press, prior to roll forming. Tooling is adjustable for various shell sizes. The U-shaped wraparound is produced by a Double-Wing Tangent Bender with auxiliary bender unit, which forms the crown, the radius bends and the bottom inbent flanges in a single operation. • Write for detailed information on the complete Struthers Wells line of packaged metal forming equipment.

**MACHINERY DIVISION
STRUTHERS WELLS CORPORATION
TITUSVILLE, PA.
Offices in Principal Cities**

Design of Room Air Conditioners--

(Continued from Page 13, Col. 3) terminates in a deep drawn stamped frame which is welded to the wrapper. There are no side openings or louvers on the case, and the mechanism is completely weather protected.

The problem of water condensate splashing through side louvers onto the walls of the building is eliminated in the Amana, because the water is evaporated and blown away from the building at high velocity.

Primer, Finish Coats Resist Weathering

Since the outer case extends through the window, the outside portion of the unit must be painted with a finish that combines durability, weathering, and corrosion resistance with an attractive inside finish. The finish is the new type Epon formulation applied as primer and finish coats, each separately baked on.

The air conditioner may be installed in any of 23 different positions, from a practically flush interior mounting to all inside the room. Where ordinances prohibit an outside extension beyond the building line, the mounting can be set to the nearest inch to meet this or other requirements.

Adjustable floor mounting legs

are available as an accessory for those installations, including casement windows, in which one half or more of the air conditioner is inside.

In the specially designed condenser air circuit, the heated air leaving the condenser is discharged out the back, at a high velocity upward angle. There is no recirculation of hot air back into the condenser, regardless of outdoor wind velocities or direction.

Because the sides of the outer case are closed, the air conditioner can be installed entirely inside the room with the condenser end positioned up to the window casing. Thus, if desired, the window may be closed when the air conditioner is not in use. This feature makes the Amana unit adaptable to casement windows by means of a simple kit, available from the factory.

Can Be Installed In Window As Small as 26 In.

Outside dimensions of the outer case are 25 in. wide and 15 in. high. It can be installed in window openings down to 26 in. wide, which is the narrowest window opening for any standard make $\frac{3}{4}$ -hp. or 1-hp. unit. The minimum height assures less obstruction to light and view.

The front cabinet is molded from

high impact sound-deadening polystyrene, in one piece. It is a dark brown color, and the metal cabinet is tan. Metal trim parts are of non-fading gold finish.

Hinged Door Covers Control

To carry out the cylindrical effect across the middle of the cabinet, there is a hinged plastic door which covers the control dial when not in use. All controls are centrally located at the front. All switch and damper functions are



THE HORIZONTAL GLIDER CONTROL is machine screwed into position across the front of the room air conditioner. This simplified, single-knob control has plainly marked settings, so operation is extremely simple.

interlocked through a single sliding knob, instantly adjustable to any one of six operating positions.

The control positions are marked on a plastic dial, which is color coded for ready identification. The entire dial marking is illuminated from a concealed pilot light, with the light transmitted through the clear plastic to the edge-lighted markings.

Controls Clearly Marked

On the control dial, at each side of the center "OFF" position are the main "HEAT" and "COOL" positions. Other settings in order are "DRY COOL," "COOL VENT," "FAN VENT," and "EXHAUST."

As an added refinement in operating convenience, light from the illuminated dial shines through a translucent panel on the control cover door, providing a subdued glow for night time operation in the bedroom.

A cooling thermostat and a 1,250-watt electric heating element with built-in overheat fuse protection are included on the deluxe models.

Filter Can Be Replaced by User

With the constant objective of making Amana air conditioners easy to use, the filter can be replaced by the user. Filter replacement is so simple that anyone can do it in a few moments time, without removing the cabinet or groping for the filter from the underside.

The return air opening is inconspicuously located along the bottom of the plastic front. With this arrangement, air flow cannot be blocked by draperies, as with side return, and there is no short

circuiting of cool outlet air which occurs when the return is on the front of the cabinet.

The air control behind the outlet grille is a unique design single vane deflector, turning on molded nylon bearings. Knurled tabs which are a part of the bearings provide truly fingertip operation from either end, for full up or down direction of conditioned air. A metal diffuser inside the cabinet permits adjustment of flow horizontally to suit individual requirements.

Large capacity exhaust and fresh air dampers are each actuated from the single knob integrated control. In the "OFF" position the dampers are automatically closed, so there is no chance that they might be left open.

Damper Held Tightly Closed For Winter Sealing

Powerful springs hold the dampers closed for tight winter sealing. The dampers themselves are made from a permanently flexible vinyl plastic sheet reinforced with metal which forms a one piece seal all around, including the hinge side.

The exhaust damper utilizes pressure discharge from the blower fan for a positive, high capacity pump-out which is independent of outdoor wind pressure. Also, the full-flow fresh air ventilation system derives extra capacity from booster action of the condenser fan, and from the triple action damper system. In addition to exhaust and fresh air dampers, there is a third return air damper which throttles the flow of room air when the fresh air damper is open, thus creating a positive pressure fresh air circuit.

(Continued on next page)

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Room Coolers Feature Single Glider Control

(Concluded from preceding page)
**Damper Partially Closed
 For 'Dry-Cool' Setting**

The return air damper which is normally open for maximum cooling, is partially closed on the "DRY-COOL" setting. The normal air flow of 290 c.f.m. for the $\frac{3}{4}$ -hp. unit is thereby reduced to 230 c.f.m., which is an ideal circulation rate for maximum extraction of moisture in humid weather.

Another feature of the fan system is the method of condensate removal. This overcomes all common troubles such as water being blown out through the condenser or splashed out of the louvers, or overflow from the base pan. In the Amana system, air is drawn through the condenser from the back. Water spray from the slinger is vaporized into this warm, heated air, which has much greater moisture holding capacity than air at normal outside temperatures.



ATTRACTIVE PLASTIC FRONT for the room air conditioner is being set in place. The unique single glider control for operating the unit is hidden under the curved cover bearing the Amana escutcheon.

As a result, all the condensate is completely vaporized in the condenser fan section without carrying droplets of moisture into the air stream.

Sides and top of the outer case

are insulated with Fiberglas and other water resisting materials for protection against condensation. Because of the fully insulated case there is no unusual heat loss with an inside room mounting.

The problem of making an airtight and waterproof window seal has been successfully solved by this unique design of gaskets: The side gasket is molded to the contour of the cabinet, and has two wide flexible wing sections. These assure a double seal on each side, regardless of variations in the window frame or fit of the window board filler sections. An extruded top cabinet gasket, supplied with a metal insert stiffener, interlocks with both side gaskets and window boards to form a continuous seal.

As added insurance of long trouble free operation, the base pan is made of 14 gauge non-rusting, zinc-coated steel, finished with two baked coats of paint. Sides and corners of the base pan are drawn in one piece, without welds.

The bottom of the base pan is entirely flat, with no projections or mounting holes. This assures a construction which is both watertight and weather-tight in the window mounting.



FIBERGLAS FILTER for the room air conditioner is slipped easily into position. The filter holder is an extruded aluminum section with a convenient finger grip along the top. The filter can be replaced by a user at home just as easily as it is done here.

Four Kits Available For Special Room Cooler Jobs

AMANA, Iowa—Four kits for special installations of room air conditioners have been made available to distributor service personnel by Amana Refrigeration Corp.

The kits include an adjustable leg kit, two casement window kits, and a wide window kit.

Adjustable leg kit No. 100 includes two 36-in. tubular steel legs to supply adjustable floor support when the air conditioner is mounted with the greater part of the cabinet extending inside the room. These legs must be used when the outside projection—beyond the building line—is less than 3 in., the company said.

The legs can be cut to length depending on height of the window sill above the floor. They rest in floor cups which are fastened in place and firmly anchor the leg mounting.

The wooden casement window kit (No. 200) and metal casement window kit (No. 250) include all necessary parts by which the air conditioner can be mounted and a weather-tight seal made flush with the inside of the window.

It is unnecessary to cut the window frame or remove the sash to make the installation, Amana said. Only those sections of glass need be removed to provide an

opening approximately $23\frac{3}{8}$ in. wide and $14\frac{1}{8}$ in. high.

Four transparent Plexiglas plastic panels are furnished in the kit to replace the panes of glass removed, so that window space at sides and top of the air conditioner is not blocked or obstructed to view.

The air conditioner is supported at the window line by angle adjusting brackets fastened to the inside sill and at the front by two tubular steel legs which are anchored at the floor or at the bottom of the baseboard.

Installation kits for wood and metal casement windows differ only in the adapter frame, which is the filler piece going between the window and the condenser section at the rear of the air conditioner.

For steel and aluminum sash casement windows, the adapter piece is $1\frac{3}{8}$ in. wide, whereas for wood casement windows, it is $6\frac{1}{8}$ in. wide. Installation procedure is the same for either type of window.

The wide window kit (No. 300) contains the extra parts for making installations in windows from 48 to 72 in. wide. This kit contains one window board and extra long window gasket, window gasket backer, and sash seal strips. It is to be used with the standard kit.

New Distributor Named In Toledo Territory

AMANA, Iowa—Toledo Merchandise Co., Toledo, has been named distributor for Amana Refrigeration, Inc., it was announced recently.

The firm will distribute Amana freezers and room air conditioners through dealers in 20 Ohio and Michigan counties surrounding Toledo.

The activity will be directed by D. C. Rolli, president of the firm; E. E. Taylor, vice president; B. D. Bradford, sales manager; J. E. Lepke, assistant sales manager; and James Carty, service manager.

Miami Vacation Offer Builds Store Traffic

TOLEDO—Cliff Clark's Home Appliance promoted considerable store traffic when it offered a 7-day vacation for two at Miami Beach to winner of a drawing. Visitors were merely required to come in to the store and register. No purchase was necessary.

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Recommended Window-Unit Installation Practice Given

AMANA, Iowa—For complete customer satisfaction, the installation of a room air conditioner is something that must be done carefully. Reputable manufacturers furnish all the supplies necessary to make a good installation and also provide detailed instructions as to how to go about it.

Pointers on some of the elements to watch in making a good window unit installation are contained in the following instructions furnished to dealers by Amana Refrigeration, Inc. here.

First step in making the installation, the Amana manual says, is fastening the bottom seal strip to the window sill. To do this, place the bottom seal strip against the back edge of the sill and hold it in place with the bottom seal retainer. Both parts should be centered in the window opening.

The sponge rubber strip should extend $\frac{1}{16}$ in. above the sill and the retainer should be $\frac{1}{8}$ in. below the sill. Nail both parts to the back edge of the sill.

Then place the window board retainers at each side of the window frame. The bottom of the retainer should rest on the sill. Fasten it in place with small wood screws.

To install the mounting brackets—the next step—attach saddle

plates to the mounting brackets with flat head machine screw and lock nut loosely assembled through the slot in the saddle plate. Locate the mounting bracket over the outside sill with the lower end of the bracket pushed against the siding. Adjust the saddle plate on the bracket so the flanged end abuts the bottom seal retainer angle. Tighten the lock nut.

The mounting brackets can then be fastened to the sill with round head wood screws, if the sill is wooden. On buildings with stone or masonry sills, the saddle plate can be screwed to the outer edge of the frame sill cap. On brick or masonry buildings, expansion screws should be used to fasten the lower end of the mounting bracket. Mounting brackets and supports must be securely fastened and sufficiently rigid to eliminate vibration and disturbing noise.

To position the outer case, set it temporarily in the window at the position desired. The front or inside end of the case must extend into the room at least flush with the sill. Hold the adjusting rod with the threaded end through the slot in the bracket and with the clevis against the perforated runner.

The rod should be at a 45° angle, unless the outer case is half way

or more inside the room. Always take the outermost holes in the runner for attaching the clevis. Fasten the adjusting rod to the runner through the holes thus selected, using two $\frac{1}{4}$ -in. machine screws on each side.

Place the outer case in position, and fasten the adjusting rods in slots using nuts, lock washer, and flat washers loosely assembled. Center the outer case in the window opening and fasten to the sill with screw plates and flat head screws through the runner.

Pitch of the case should be such that the outer end is approximately $\frac{1}{4}$ in. lower than the front to assure proper drainage of rain water and condensate. As each side is tilted, tighten the nuts on either side of the mounting bracket.

Fitting the window gasket is another step that requires care. First cut the window gasket and backer to a length equal to the full width of the window sash (including the side grooves). Then insert the backer in the gasket slot. Notch the front face of the gasket the depth of the window grooves, so that this portion of the gasket makes a tight seal against the window stop on each side. Fit the gasket in place over the window boards and outer case. Then lower the window sash firmly against the gasket with the front lip tightly engaging the gasket.

The space between the lower and upper sashes is sealed with felt sash seal strip. Fit the strip along the top of the lower sash and



IN HANDLING ROOM AIR CONDITIONERS in installation or service, care must be taken where cabinet sections or parts are made of plastic. Metal frame should be grasped in pulling chassis from the outer case.

notch to fit the contour of the upper sash. Then tack in place.

Before mounting the chassis, inspect the unit for any damage which might have occurred in shipment.

Spin the fan by hand to make sure that it runs freely without hitting the enclosure. Condenser fan can be adjusted, if necessary, by the Allen set screw in fan hub.

Be sure the filter and filter holder are properly assembled and positioned. Slide the chassis into place and then check the controls to see that they are operating properly.

Questions on Installation Problems Answered

Here are some common questions about air conditioner installations and answers supplied by H. F. Lathrop, Amana engineer:

What is the best height from the floor at which a window air conditioner should be installed?

The best height from the floor for locating the air conditioner is generally determined by the window opening, and is not a matter of choice in the installation. In the case of special installation in a wall opening, the air conditioner may be located either below or above the normal window sill level.

High wall installations more than 6 ft. above the floor are to be avoided for two reasons: The inconvenience of reaching the controls, and the added load of cooling the higher strata of air close to the ceiling.

In estimating the area that a room air conditioner will cool, what ceiling height do you assume?

For air conditioning load estimates, a ceiling height of 8 ft. is assumed.

Does a two-story house present any particular problems to a homeowner who is using a single room air conditioner to cool one upstairs bedroom?

There are no problems pertaining to installation or operation of an air conditioner in a second floor bedroom. The only unusual factors to consider are added loads from sun exposure onto a flat roof or unventilated attic space above the room being cooled.

What is a good general practice to follow with respect to the arrangement of windows (open or



POSITIONING THE OUTER CASE of the room air conditioner, with the Amana unit, is done by means of an adjusting rod which is fastened in the slots of a perforated runner. It is recommended that the case be tilted outward to assure proper drainage of rain water and condensate.

closed) throughout the house when a single room air conditioner is used?

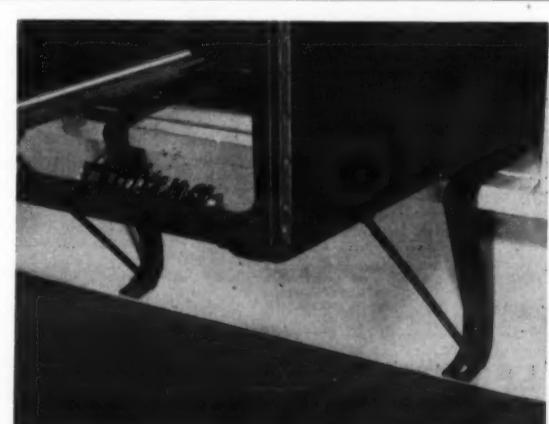
For maximum cooling effect, the windows in the room or rooms being cooled should be kept closed. For other rooms, not connected to the cooled room by open doors or archways, it makes no difference whether windows are open or closed.

Can you list some recommendations you might make with respect to using several room air conditioners to cool a six-room (three bedroom) house? That is: Location, size of units probably necessary, etc.

For complete air conditioning of a six-room house with window units it is always best to install smaller capacity units in each room than to try to spread the cooling from two or three larger units.

If the latter is done, some rooms are overcooled while others will remain warm. For bedrooms particularly, there should be a separate room cooler for each room so that doors may be kept closed and conditions relating to temperature, cooling or heating, and fresh air ventilation may be individually controlled.

A separate unit is required in the kitchen to counteract heating loads from cooking and also odors.



OUTER CASE IN PLACE in the installation of the Amana room air conditioner shows adjusting rods connected to mounting bracket, and case tilted outward to assure proper drainage.

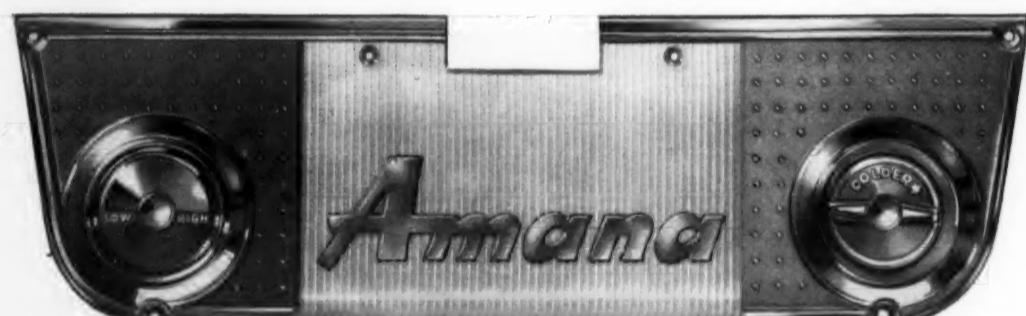
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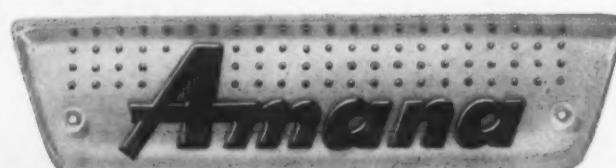
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Amana Society Observes Its 100th Centennial In Iowa

This is the Amana Society's 100th anniversary. For it was just 100 years ago that a small group of God-fearing people, seeking refuge from religious persecution in the Old World, established the seven Amana colonies in eastern Iowa.

In these 26,000 acres, in the valley of the Iowa River, an area rich in black soil and timber, members of the Amana Society set out to build a new life.

From this humble beginning, true to the American heritage, there has emerged a company that lays claim to being the nation's largest manufacturer of home freezers.

Until 1950, this company, Amana Refrigeration, Inc., was a division of the Amana Society, which for more than 75 years wanted no part of business or profits as we know it today.

It all started in 1854 when a group of people of West German, Swiss, and Alsatian ancestry left their homes and came west seeking a life different from the one they had left. They settled in the new territory of Iowa and with a will set to work to build a new type of community.

They cut the timber, quarried the stone, and built their houses, shops, factories, churches, and schoolhouses. They planted orchards and vineyards and started flocks and herds. Within the ensuing seven years, five more villages were laid out within a radius of six miles mostly along the same plan.

Meals Were Served In Community Kitchens

Although most of the property was held in common by the society, each family was assigned to permanent living quarters, which were composed of plain but large and comfortable bedrooms and living rooms. There were no private dining rooms or kitchens. Instead, all meals were prepared in large community kitchens which served from 30 to 50 people of the same neighborhood. Most of the food was produced in the colony itself and there was always more than enough of the plain, wholesome food to satisfy the hungriest villager.

Religious services were among the most important activities of the community and there were often more than 12 meetings a week. In keeping with the precepts of the society's constitution, the meeting houses were plain whitewashed buildings with bare floors and hard, unpainted pews. There was no pulpit and men would sit on one side, women on the other with the elders of the church in the center facing them. The service was a solemn affair usually including silent prayer, hymns, a bible lesson, and sermons given by various of the elders. The entire atmosphere was one of quiet solemnity and spiritual idealism.

Old World Craftsmanship

This same spirit was carried on into the industrial and agricultural activities of the society. Aiming at self-sufficiency, the fine Amana artisans and craftsmen established farms, furniture factories, wagon and implement factories, woolen mills, and meat industries. There was no particular concern over making profits. The main idea was to produce enough to supply the needs of the society with perhaps a small margin left over for contingencies.

The community—with its Old World dedication to the high standards and skill and workmanship—flourished. The woolen goods, furniture, baked products, hickory

smoked hams and bacon, originally intended for local consumption, soon were in ever-widening demand. People learned that Amana products meant quality and integrity.

In the 1930s, the growth of automobiles, radio, and other forms of communication eliminated the early isolation of the colony and brought the members in closer contact with the world around. The younger members of the colony especially wanted to try their skills on the outside world.

In these depression days, community living, community sharing, and the dependency of the individual on the community for everything simply couldn't satisfy the members of the society any longer.

The incentive for working, the incentive for profit, the feeling that the individual was and should be the master of his fate was too strong and in 1932, the more farsighted leaders of the community realized that reorganization of the society needed consideration.

Organized as Corporation

A committee was formed and after many months of deliberation, the "great change" from community living to capitalism was voted by the membership of the society. The new form embodied the formation of a new Amana Society with the features of a joint stock corporation organized for profit.

Each member of the society received shares in the new corporation entitling him to one vote which represented his proportionate value of the entire property of the society. From now on, the enterprises of the society were to be run like any other business—paying wages and for profit.

The transition from the old order to the new was not without its difficulties, but from the first the spirit of the new enterprise was evident. The new corporation had the benefit of the double incentive to worker productiveness. Besides being wage earners, member workers also owned stock in the corporation and therefore shared in its profits. Conscientious effort on their part as workers was an investment that paid dividends and at the same time provided chances for higher wages.

Refrigeration Business

Started In 1934

An Amana Society member, George Foerstner, started the society's refrigeration business with a handful of employees in an unused corner of a furniture shop, in 1934. Beer coolers were the first product. Calls came for refrigerated display cases and storage rooms for butchers and grocers, and the line was expanded.

In 1936, the group turned their attention to frozen food locker plants. The frozen food rage was just starting to gain momentum, and Amana was prepared to build the necessary equipment.

Amana began to design, engineer, and install complete locker plants—including the refrigeration system, lockers, and building. These frozen food lockers were, in effect, freezers-away-from-home. So, this activity dates Amana's interest and experience in home food freezers.

All in all, Amana built more than 200 locker plants, containing more than 70,000 individual food lockers. On all installations, Foerstner stuck to his policy of quality and top engineering. He and his organization strived to keep power costs low for food locker operators.

Amana grew steadily in the first

10 years of its life, in manufacturing facilities, number of employees, and sales volume. Business grew from \$50,000 in the first year to a million in 1944. The plant that started with one or two employees, employed 50 in 1939.

Foerstner became intrigued with prospects of the home freezer field in 1939, and it was in that year that Amana built its first food freezers for the home. It was a natural succession from locker plants to home freezers. But, 1940 saw the buildup of the defense program, and the next year marked the beginning of World War II. So, it wasn't until 1945 that George Foerstner and Amana were able to jump into the home freezer business with both feet.

Refrigeration Systems Were Built for Armed Services

During the war, Amana built refrigeration systems of all kinds for the armed services and for war plants. Amana designed and installed freezing systems to subject radios and other aircraft parts to temperatures from 75° F. to -80° F.

In 1943, Amana's factory burned down. Almost overnight, Amana transferred work on its government contracts to three other plants in nearby Homestead, Cedar Rapids, and Charles City. Production continued with little delay or upset, and Amana delivered the goods on time—even though it had

No Bars . . . No Cops

AMANA, Iowa—The Amana refrigeration plant is located in one of seven Amana villages—the one known as Middle Amana. This is a village with no soda fountain, no theater, no bar, no banks, and a main street 500 yards long. There are no peace officers in Middle Amana.

The modern freezer plant is bounded on the south by a cornfield, on the north by a mill stream in which there is good fishing occasionally; across the road on the north is a dairy farm; and at the northeast corner is a new village school.

no factory of its own at the time.

For this achievement, Amana was awarded an Army-Navy "E"—the first of four to be won. By the end of the war, Amana was one of the principal suppliers of walk-in coolers for the Navy. The first also completed major air conditioning installations.

In 1945, Amana Refrigeration was able to return to the manufacture of food freezers—that had just barely begun in 1939. Newly-designed home freezers were placed in production, and 8,000 were made the first year.

Although its first model was a small 5-cu. ft. chest freezer, Amana soon turned to the upright design. A 30-cu. ft. upright was the first,

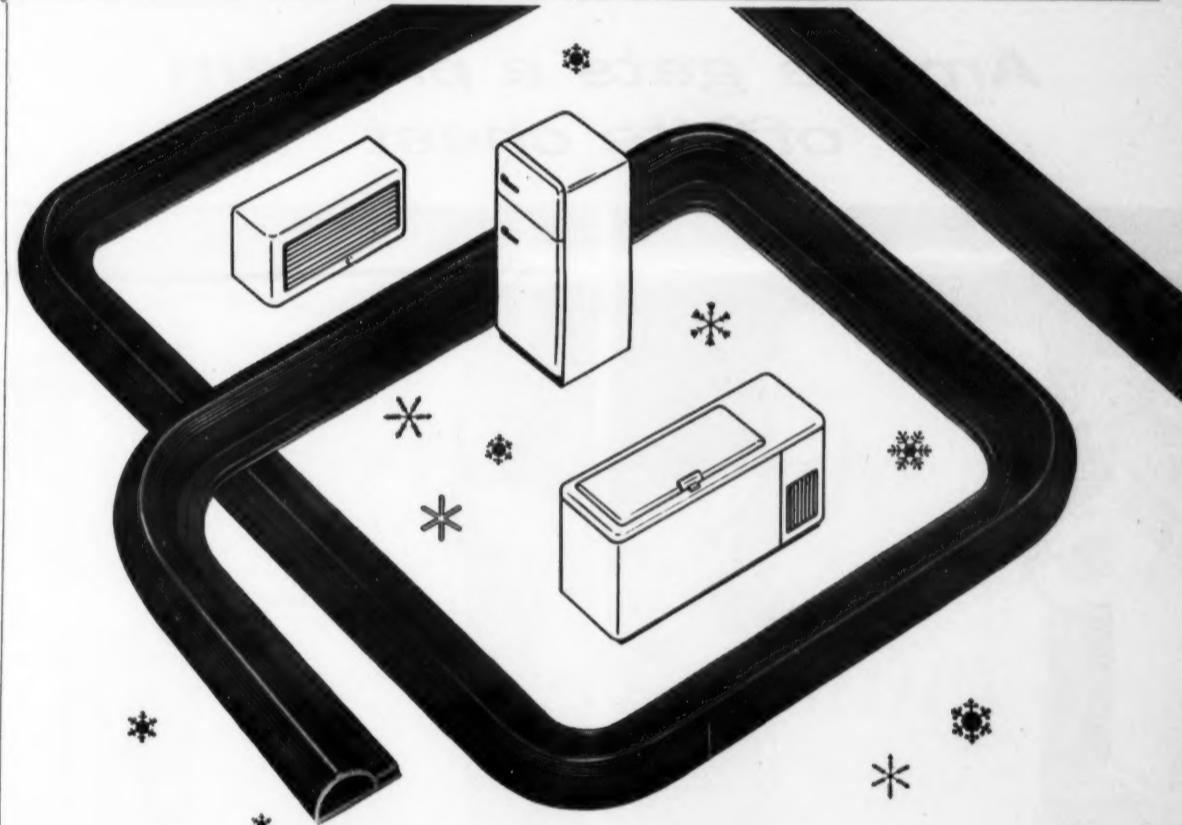
and it was followed by 18, 25, and 12-cu. ft. models.

With demand soaring, the factory was more than doubled in 1951, but still this was not enough. Further expansion in 1952 brought Amana's capacity to more than 300 freezers a day. In the spring of that year, Amana's board of directors voted to double the size of its 170,000-sq. ft. plant. This \$3,500,000 expansion, now completed, triples Amana's capacity and makes possible boosting output to 1,000 freezers daily.

In 1950, the refrigeration business was established as a private corporation, with Cedar Rapids, Iowa industrialist Howard Hall as president, and George C. Foerstner as executive vice president.

The traditional skills handed down from father to son have served to make all Amana products widely desired. All phases of the Amana Society are flourishing today with Amana meat products, woolens, and freezers known far and wide. Continued exhaustive research has kept the Amana line in the forefront of the freezers manufactured for the home.

Thus as a new century for the Amana colonies begins, there is a quiet confidence that the same devotion to spiritual liberty and happiness, and the same dedication to traditional craftsmanship and quality—that have guided Amana in the past—will carry these people to an even greater future.



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Freezer Trade-Ins Profitable

Walter D. Kline, president, Kline Distributing Co., Des Moines, Iowa:

"Retail sales of high quality food freezers in 1954 will exceed the record years in 1951 and 1953, in this area, despite saturation in some rural areas as high as 70%."

"Several factors indicate this clearly:

"1. More high quality urban dealers have accepted the food freezer as a profitable appliance; in many cases the most profitable. There are no 'seasons' in the freezer business, no big build-ups, big let-downs, or inventory problems. Problems often outlast profits. Not so in the freezer business."

"2. Profits on retail freezer sales are higher. There is less service, fewer trade-ins, (although this is profitable), and less expensive promotions. Today, the food freezer is an accepted item—ask the homemakers!"

"3. Freezer saturation is promoting additional units into homes with insufficient freezer capacity. It promotes the sale of modern, up-to-date units, as replacements for 4 to 8-year-old units."

"4. Trade-ins sell profitably, to families who insist they cannot afford a new freezer. They are good future prospects."

"5. A vast urban market exists. Dealers are sensing it and are approaching it intelligently with sound sales training and product analysis."

"The future is bright for those who recognize the potentialities of the food freezer and approach the market with a well organized sales effort."

Better Training of Salesmen Will Insure Future

Leo J. Finn, Finn Distributing Co., Wichita, Kan.:

"If we did not feel very strongly that the best years of freezer business are ahead for us, we would not remain in the freezer business exclusively."

"We have watched a constant increase in volume of freezer sales, and we do not anticipate a reversal of this increase. However, we do feel that definite programs and plans are necessary to continue to merit an increase of business."

"More and better training for retail salesmen will be the key to future increased sales. Selling in the future will be harder and only the well-trained salesman will succeed. It is certainly a credit to the freezer, as an appliance, that it could reach such a high point of saturation in such a few years without fully qualified sales representation in most stores."

"We feel that future freezer sales will be for the appliance dealer who wants this business. It will not come to him just because he has a freezer in his line. He will have to work for this appliance business just the same as with any other appliance in his store. Specialty stores and locker plants will continue for some time to get a share of this lush market."

Distributor Can Help Sell To 'No Saturation' Market

G. M. Riesser, president, Reliable Brands, Inc., Dayton:

"I think the freezer business has a wonderful future. I started in the refrigeration business when we were bucking the iceman and people did not know about mechanical refrigeration."

"We outsold the iceman, and the freezer is much easier to sell because people are now more mechanical and refrigeration minded. It is my opinion that in another five years a freezer will be as important in the home as the refrigerator is today."

"The future of the freezer business is up to the factory distributor and dealer. We know in our company that freezers can be sold, and to a mass market. The dealer will not get out and push hard enough to get the sales that he should, so it becomes our duty to work harder to get him to see and capitalize on the big market that he is missing."

"I think that the freezer will become a major factor in the retail dealer's sales. It can in time represent his biggest dollar volume of any one appliance. At present there is no saturation to speak of, probably less than 15%. We have a wide open market, with no trade-ins and a big ticket."

Public Now Accepts Freezer As Real Necessity

L. M. Johnson, president, Lou Johnson Co., Portland, Ore.:

"Yesterday's infant . . . the home freezer industry . . . had a few growing pains and probably still has. However, today it no longer can be called an infant. The home freezer business is a substantial business equaling in unit sale and surpassing the dollar volume of the electric range industry."

"An industry that has grown so fast was bound to have growing pains. Today, however, the freezer business is back in the hands of the appliance dealer where it belongs."

"Yesterday's exaggerations become today's realities. The pioneering saturation stage has been accomplished when the public will now accept a freezer as a real necessity of life."

"However, the low saturation, the greatest volume opportunity in major appliances lies in the home freezer industry for those who are willing to do a sound merchandising job—aiming at the huge home freezer market. Amana, the recognized leader in this industry, has produced this year in this most competitive market, a freezer that every homemaker will want to own."

"Freezer business should thrive if properly sold even in a market that may be off for other white goods."

90% of Volume from Food Plans

Harvey Farber, president of Amana Products Corp., Long Island City, N. Y.:

"Over 90% of our volume of business is being done with some sort of food plan dealer. Less than 10% is coming from accredited appliance dealers in this area, though we do look for an improvement in freezer sales through normal appliance dealer channels in 1954."

"It is my opinion that by the end of 1954, freezer sales in this area should break down to 75% food plan, 25% appliance dealer."

"Home freezer volume in 1954 will be slightly higher than 1953. However, you will find there will be fewer manufacturers sharing this business during the year. Competition and design and features of the product, together with growing tendency on the part of the food plan buyer to demand a nationally-advertised product, must inevitably take their toll of the non-nationally advertised firm."

Harvey Farber



G. M. Riesser



L. M. Johnson

Where Housewives Can See It

10,000 Grocery Bags Carry Dealer's Offer of Cook Book, Demonstration

McMINNVILLE, Ore. — Using the family grocery bag as an advertising medium for Amana freezers is an idea that has worked successfully for Jack Walker of the Farnham Electric Co. here.

Walker had 10,000 grocery bags imprinted with an ad offering housewives a free frozen food cook book if they would return the bag to the Amana dealer's store and witness a freezer demonstration. He distributed these bags to eight leading local grocery stores and let nature take its course.

The advertisement also included a brief description and picture of Amana's upright and chest-type freezers and a table showing various monthly payment plans offered. Payments required to pay for various size freezers were listed for 12, 18, and 24-month terms.

Walker reported that 200 women brought bags back to his store and witnessed demonstrations. Six of these bought 18-cu. ft. freezers. Fifty others are considered to be live prospects.

Walker says he expects to sell at least 30 freezers as a result of the promotion and, through the novelty of the plan, to make his company's name known to all homes in the Willamette Valley around McMinnville. He commented

that most of the women who responded to the promotion had not been in his store before.

Walker said that he is pleased with results of the promotion and intends to use it again. Advantages he sees are that the message is brought right into the woman's kitchen at a time when she is primarily interested in food preservation and preparation, the message is not competing with distracting influences, leads are obtained at low cost, and the message may be re-read each time the multi-purpose bag is used.

The bags were bought from the Printed Bag Co. of Trigard, Ore. Assistance in the promotion was supplied by Dick Mathews of the Lou Johnson Co., Portland, Amana distributor in the area.

Hills Distributes Amana In Western South Dakota

AMANA, Iowa—Hills Gas & Appliance Co., Rapid City, S. D., has been appointed distributor for Amana home freezers and room air conditioners it was announced by E. L. Hinchliff, sales manager of Amana Refrigeration, Inc.

The firm will cover the western half of South Dakota and part of Wyoming and North Dakota.

How aluminum

helped write the Amana story

THE STORY OF AMANA's upright home freezer is a story in which aluminum has played a leading role.

By taking full advantage of aluminum's unique properties—such as its thermal conductivity, ease of fabrication, lightness and decorative appearance—AMANA became the first manufacturer in the refrigeration industry to produce a successful upright freezer.

Since AMANA first started operations, we have been their principal supplier of aluminum em-

bossed sheet, used for their freezer liners and freezer plates. Because our basic business is supplying manufacturers, this embossed sheet was provided to our customer, Bohn Aluminum, who fabricated the units for AMANA.

The completion of AMANA's major expansion program gives us a great deal of satisfaction... first, because it marks a big step forward for a valued customer; and, second, because their success implies a tribute to the high quality of Kaiser Aluminum and the service behind it.

Kaiser Aluminum

setting the pace—in growth, quality and service

More Freezer Storage Per Cu. Ft.

Modern Engineering and Desire To Have Freezer In Kitchen Have Led to Increased Storage In Relation to Floor Space

AMANA, Iowa—Continuing engineering research in home freezer design has provided more food space per total cabinet volume, and less floor space occupied in relation to total capacity, points out Robert E. Moore, director of engineering for Amana Refrigeration, Inc.

Within the last few years much progress has been made toward bringing the freezer into the kitchen, Moore said. There is an increasing number of new homes with freezer space in, or near, the food preparation center—the kitchen. At the same time, more food space is provided in new freezer designs which conserve valuable kitchen floor space.

15-Ft. Freezer Requires Same Space as 4-Ft. Cabinet Did

A 15-cu. ft. upright freezer of 1954 occupies the same floor space as the 4-cu. ft. chest freezer of 1947.

To a considerable degree, the increase in popularity of upright freezers is bringing the freezer into the kitchen. In 1952, a *Good Housekeeping* magazine survey showed that 16% of the freez-

ers surveyed were in kitchens. Probably most of these were chests.

35% of Upright Amanas Going Into Kitchens

Today, 35% of the Amana upright freezers are going into kitchens. "This trend will be increased in the future as freezer designs are improved, and as the convenience of kitchen freezer location is generally recognized," Moore predicted.

In 1947, the 4-cu. ft. chest freezer, which was the popular freezer of that time, utilized 25% of the total cabinet volume for food storage. Today, the 15-cu. ft. upright freezer utilizes approximately 45% of the cabinet space.

"New developments which can be foreseen at this time make it possible to predict with a considerable degree of certainty that by 1960, a 25-cu. ft. upright freezer will utilize 60% of the outer case volume for food storage," Moore said. "Further, it is theoretically possible for utilization to be as high as 75% if radically new developments in insulation, in heat transfer apparatus, and in com-

pressors should materialize."

As the freezer is brought into the kitchen and made more accessible to the housewife, it becomes increasingly important to arrange the interior so that large quantities and varieties of food are easily accessible, Moore declares.

Usefulness Measured by Accessibility

"The usefulness of the freezer in the kitchen is directly measured by the immediate accessibility of every package," is his way of putting it.

"The unmistakable trend is toward eventual complete utilization of door space," he added, "so that as much food is visible and immediately accessible on the door as is visible on the food compartment side. Amana has achieved this objective in its 1954 upright models."

As the effort continues to design a freezer which will fit better into the kitchen, studies are frequently made to find an entirely new and better freezer shape, Moore points out.

"Although it now appears that

How Freezer Designs Have Developed Since 1947 and How They May Be In 1960

CUBIC FEET OF FOOD STORAGE PER SQUARE FOOT OF FLOOR AREA OCCUPIED—



PERCENTAGE OF OUTER CASE VOLUME USED FOR FOOD STORAGE—

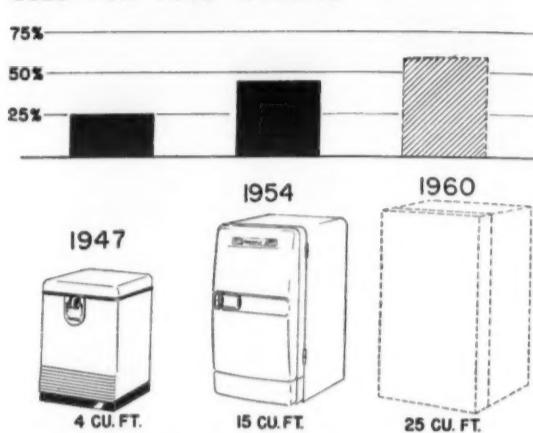


CHART SHOWS how usable portion of freezer has increased in relation to total volume since 1947. Bottom section shows the relationship between storage space and floor area occupied. New developments which can be foreseen now make it likely that by 1960 a 25-cu. ft. freezer will utilize 60% of the cabinet volume.

improved upright food freezers are most likely to satisfy the requirements of kitchen usefulness, there is still a distinct possibility that a radically new type may be developed, with even greater advantages than the conventional upright," he said.

"As each family finds new uses

for its freezer, requirements for freezer capacity and conveniences will continue to increase. To satisfy these needs, the design trend is toward more compactness and food accessibility, with accompanying improvements in freezing performance and operating economy," he concluded.

Air Conditioning, the Business that has *tripled* in three years

Air Conditioning is an explosive business. The existing market is big—the potential *tremendous!* Less than 2% of the prospects have been sold!

Action is fast. Air conditioning sales for 1954 are expected to show a gain of \$400,000,000 over 1953. Sale of room coolers which reached 1,000,000 last year should top the 1,400,000 mark this year.

Year-round residential air conditioning installations are moving ahead rapidly.

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*Our hats are off to you
on a job well done!*

CONGRATULATIONS

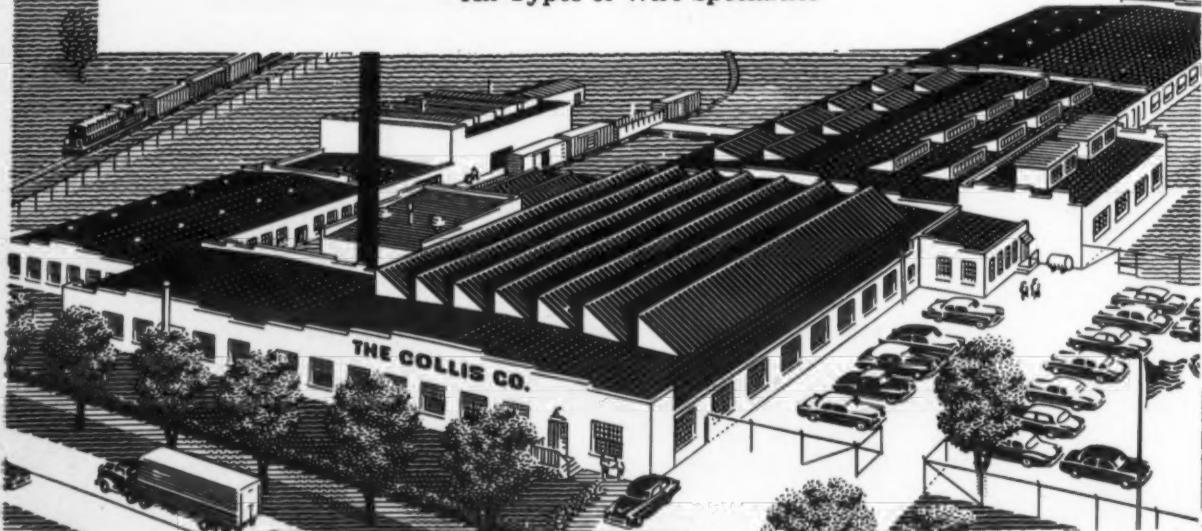
AMANA REFRIGERATION, INC.
on Your Major Expansion Program

THE COLLIS COMPANY is proud to be one of your
Suppliers for The Amana Line.

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ESTABLISHED IN 1901

Manufacturers of

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- Refrigerator Baskets
- Freezer Baskets
- All Types of Wire Specialties
- Dividers and Separators
- Wire Guards
- Wire Grills



Ingenious Lab Tests Check Strain on Parts, System Capacity, and Freezer Performance

AMANA, Iowa—Proving ground for present and future Amana freezers and room air conditioners is the firm's engineering laboratory. There are conducted advance development studies, exhaustive studies on production models chosen at random from the assembly line, and tests of vendors' materials. The laboratory is a combination proving ground and "torture chamber."

Behind every new model are months of continuing research and development. First, the new concept or new design is conceived in an engineer's sketch. Then the idea achieves three dimensions in a wood mock-up.

If the design still bears consideration, a metal sample is created in the engineering laboratory's model shop. This handmade sample is subjected to intensive performance tests. With lessons

learned from this model, the process starts all over again.

Before the 1954 models were put in production, some 265 mock-ups of parts and complete freezers were built.

Production models are removed from the assembly line regularly and subjected to rigorous tests. To make certain freezer shelves will support the normal food load in actual use, engineers load them with lead weighing four times the typical food load, and then watch for any signs of strain.

To assure that freezers and room air conditioners shipped from the plant will arrive at their destination in perfect condition, these crated production models are given the "shake test" and the "hump test," both simulating conditions encountered on a railroad or motor freight journey.

Doors are slammed 100,000



PERFORMANCE OF FREEZERS in the test room on the other side of this wall is carefully recorded for study. The upper row of watt-hour meters registers power consumption, and the center row of instruments records cycling the length of operation. At the left, the technician is checking a temperature reading.



PRODUCTION FREEZERS, selected at random from the assembly lines, are being given exhaustive tests in the engineering laboratory. Competitive freezers also are studied here. Heating, cooling, and humidifying equipment permit the simulation of the most severe field conditions that could be encountered.

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1954 EDITION

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BRITTLENESS and bond to painted surfaces at cold temperatures are the properties of a hot sealer being tested here. A 10-lb. steel ball is dropped 18 in. onto a painted metal panel having 1/8 in. thick hot sealer on the top surface. Both ball and panel are frozen at 0° F. for this test. Any cracking or shattering in this impact test will indicate sealer won't stand up in normal freezer operation or in shipment during winter.

times to confirm the durability of hinges and the latch mechanism. Freezer models are placed in a room where temperature and humidity are created to simulate conditions in different parts of the country and in different seasons. Refrigeration and electrical per-

formance also is tested, with emphasis on power consumption, cycling, running time, air temperature in every area of the freezer, and absence of sweating.

Continuing tests also are conducted on materials and supplies bought from outside suppliers. Paints and sealers are subjected to excessive heat in a "humidity chest," to make certain no blistering or rust occurs.



RIGIDITY OF SHELVES in a home freezer is being tested here. More than 350 lbs. of these rolls of solder, or three times the maximum weight of food that could be stored, are being placed on the shelf. Any deflection is read on the dial recorder as the weights are added and removed.

Plastic parts are tested for color retention. Metal and plastic parts are checked for bendability. Asphalt used as a sealer is given the impact test—to make certain there will be no cracking, and subsequent impairment of the seal of the refrigeration system.

In a special soundproof room, with controlled temperature and humidity conditions, room air conditioners are tested for cooling capacity in terms of B.t.u.'s, air delivery capacity, noise level, and dehumidification.

JERVIS

CONGRATULATES

AMANA
REFRIGERATION, INC.

ON COMPLETION OF ITS MAJOR EXPANSION PROGRAM
AT
AMANA, IOWA

Down through the years since the introduction of the first Amana Freezers, Jervis Corporation has worked hand-in-hand with Amana's designing and engineering staffs to create and supply the beautiful, serviceable exterior hardware that has helped Amana Freezers win the increasing share of the freezer market that necessitated the major expansion program.

AMANA has just completed.

We take this opportunity to assure our many customers that in the future, as in the past, Jervis Corporation's facilities and services will keep pace with the requirements of any program they may undertake.

JERVIS
CORPORATION
GRANDVILLE, MICHIGAN



J.C.

'Robot' Paint System Finishes Freezer and Room Conditioner Parts Simultaneously

AMANA, Iowa — The exterior finishing process in the Amana production operations here is distinguished (1) by the use of a new, complete electrostatic two-coat, two-bake finishing system and (2) the use of a separate building for the entire paint and finishing process for the purpose of better quality control.

The system paints, bakes, and finishes the principal parts for any freezer model twice in less than 60 seconds.

In addition to the freezers, room air conditioner cabinets and 35 other parts which are hand-sprayed and hand-dipped, are rust-proofed and baked twice by the system.

The paint system is believed by production officials here to be the most versatile in the country, because it sprays the largest size parts, the greatest variety of metal pieces, making the change easily from model to model.

Paint particles are magnetized and then permanently attracted to the metal—resulting in a smooth, uniform, and chip-resistant finish.

The system also speeds the painting process by more than 50%. On one shift the paint department finishes as many freezers as were handled by two shifts formerly. Then, too, room air con-



HERE IS THE "THREE-LANE HIGHWAY" in the paint department. On the left, upright freezer cabinets which have come from the prime bake oven are being tack wiped and sanded. On the right, chest freezer cabinets are headed for the prime oven. The chest freezer liners in the center are emerging from the prime oven.

ditioners were not being made at the plant.

Installed at a cost of \$400,000, Amana's two-story painting and enameling department continuously feeds parts for three assembly lines. With available storage space for enameled parts limiting inventory to not more than two

hours of production, the finishing system must handle relatively short runs of each model and make the change from model to model with ease.

Upright and chest freezer cabinets, doors, liners, lids, and other parts—move through the system on an overhead conveyor. They are

rustproofed, then receive electrostatically-applied primer and finish coats, each of which is baked-on.

As described by Neal Stewart, Amana's paint superintendent, as each part reaches the giant electrostatic paint rooms, it trips a mechanism which triggers two batteries of robot-like spray guns, four to each rack. Then, in keeping with predetermined settings governed by the size and shape of different freezer parts, the guns spray from .2 to 1.8 seconds. Each of the parts is sprayed by different combinations of spray guns.

After a primer coat, the freezer cabinet or other part moves to a giant oven where the finish is baked on. Then the part is returned to the electrostatic paint booth where a finish enamel coat is applied. It, too, is baked on in a second oven, to insure a lasting, uniform finish.

Parts to be painted are loaded on a conveyor at a point adjacent to the plant's metal finishing area. This conveyor, by Conveyer System, Inc., 2,700 ft. long, with two drives and two take-ups, and trolleys spaced on 24-in. centers, moves them through the entire paint system. Welded under each set of trolleys is an electrostatic gun trip arm, sanitary hook, and the swivel work load hook. These trip arms are set in a predetermined pattern by the loading operators.

Because of the large parts that are processed, each swivel hook has a small hole drilled through it, and a spring steel pin is inserted to prevent the ware from turning in the power washer. The pin is removed after the dry-off oven to permit the hangers to revolve when necessary.

Stages In Finishing

First stage in the new finishing system is the cleaning and phosphating operation, built by Despatch Oven, according to specifications developed jointly by finishing specialists of Despatch, Amana, and Parker Rustproof Co. This Bonderizing or rustproofing follows this schedule:

1—Alkali Cleaner (160° F.)	60 sec.
Drain	50 sec.
2—Hot Water Rinse (160° F.)	60 sec.
Drain	50 sec.
3—Zinc Phosphatizing Solution (145° F.)	60 sec.
(Parker Rustproof Bonderite No. 160)	
Drain	50 sec.
4—Cold Water Rinse	30 sec.
Drain	50 sec.
5—Chromic Phosphoric Acid Rinse (100° F.)	30 sec.
Drain	50 sec.

An exhaust fan is located over the entrance and exit of the unit. The solutions are applied in each stage by jet nozzles which are angled to give each part a thorough covering. Solutions are checked and rigidly controlled by the operator. In order to condition the ware satisfactorily, demineralized

water is used in the last stage.

The demineralizer, made by Industrial Pump & Filter Mfg. Co., is a self-contained, factory-packed unit delivering 500 gals. per hour and approximately 6,000 gals. between regenerations. As the ware leaves the washer it drains for 70 ft., then an operator goes over the ware with an air hose to remove excess moisture.

The ware now enters the dry-off Despatch gas-fired oven where it dries for 6 minutes at 300° F. Cabinets are hung right side up through the power washer for draining, then they are turned upside down after the dry-off oven, so they can be electrostatically sprayed in this position. Parts are tack wiped in a pressurized room just before entering the Ashdee electrostatic spray installation.

The ware now passes through two large, staggered electrostatic spray booths, each booth spraying two passes on their respective sides. Conventional Binks automatic spray guns are used, reciprocating in a vertical plane, and spraying perpendicularly to the conveyor through ionizing electrodes.

A 100,000 volt transformer-rectifier unit energizes the electrodes, electrically charging the paint particles which are attracted to the grounded ware. Each booth has a separate transformer-rectifier unit. However, two booths may be operated from one unit in case repairs are necessary.

The guns are actuated by the trip arm on the conveyor which is set in a predetermined position by the loading operators. Actuation is made through a switch-relay-solenoid air valve combination. To finish eight different models of freezers, six upright and two chest, it was necessary to consider three dimensions—width, length, and height.

Width: Different widths of models means a varying distance from the spray gun to the ware. To keep this distance uniform within a 7-in. limit, the guns and electrodes are mounted on movable fixtures to accommodate three classifications of width.

Length: This determines the interval of time that a gun is spraying and varies from 26 in. intervals of conveyor time for the side of an upright cabinet, to 60 in. for the sides of a chest cabinet.

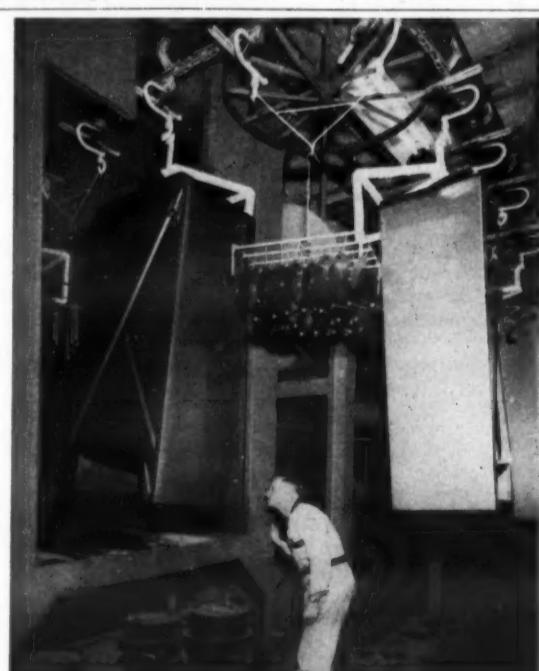
Height: This determines the number of guns necessary to finish a side and varies from two guns, for a chest, to four guns for an upright cabinet.

(Concluded on next page)



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UPRIGHT FREEZERS are shown emerging from the Bonderite process where they are rustproofed by the jet-spray application of fine cleaning and phosphatizing solutions. Hanging between the two freezers can be seen curved parts, fan housings, for room air conditioners which also have been rustproofed.

How 'Robot' Paint System Works

(Concluded from preceding page)

The actuation for the correct number of guns for the required length of time is accomplished as follows: Each conveyor hook is equipped with trip arm, mounted in a horizontal plane, perpendicular to the conveyor, with a four-position setting. Three positions can actuate switches while the fourth is an off position.

In each electrostatic booth there are three tracks mounted parallel to the conveyor in a position corresponding to the three positions of the trip arm. Switches are mounted on these tracks and can be adjusted as to position parallel to the conveyor.

Switches on track No. 1 will actuate the four side guns and the bottom guns to spray all the cabinet sides and tops. Switches on track No. 2 will actuate the four side guns for spraying the long doors or long combinations of doors and machine compartment doors. Switches on track No. 3 actuate the three lower side guns to spray short doors and chest cabinets.

For chest cabinets, one gun is de-actuated by turning off the control air. Length of gun time is obtained by the distance the switches are set apart. A pair of switches is placed on each track for each length of gun time desired. Thus, on track No. 3 there is a pair of switches for a 60-in., 40-in., and 30-in. interval.

The desired switch is actuated by the booth operator from a switch control panel so that only one pair of switches is used at one time. The width variation is handled by batching production on one of three classifications of parts grouped according to width and setting the movable electrodes and guns for these different widths. Guns and electrodes are moved rapidly and short runs of 10 minutes or more of each width can be handled.

One type hanger accommodates all the different models of upright cabinets, while one type of adjustable arm hanger accommodates

all of the doors and a variety of other parts for chests and uprights. This hanger can be made wide or narrow, so that doors can be hung at a width corresponding to the width of the cabinet that it is accompanying in production.

Following the electrostatic operation is the hand reinforcing booth. Here the backs and inner edges are given a light coat to insure necessary film thickness. Both prime and finish booths are identical except that the finish booths have two fluid lines, gray and white. Ware passes from the spray booths through enclosures extending up to the ovens. Dirt pans are provided in the sanitary hooks through all the booths and half way through each oven.

Bake ovens and air replacement units are located on the second floor directly above the spray booths. Ware is baked in the prime oven at 345° F., and at 300° F. in the finish oven. Both ovens are alike in equipment and capacity. Both are A type, multiple pass Despatch ovens with 450 ft. of monorail.

Each oven has two direct gas-fired burners with a combination of instruments which will shut off the gas supply to the heater on the failure of exhaust fans, electric current, gas pilot, gas pressure, pressure blower, or in the event of excessive heat delivery.

A time delay relay makes it impossible to turn on or light the gas at the heater until the supply and exhaust fans have run for a predetermined period of time in order to properly ventilate the heater and oven.

Ovens are made of metal panels, consisting of 3-in. rock wool insulation encased in sheet metal. All panels are telescopic joints to automatically take care of oven contraction and expansion. Each oven is equipped with explosionproof lights and three glass windows for observation purposes.

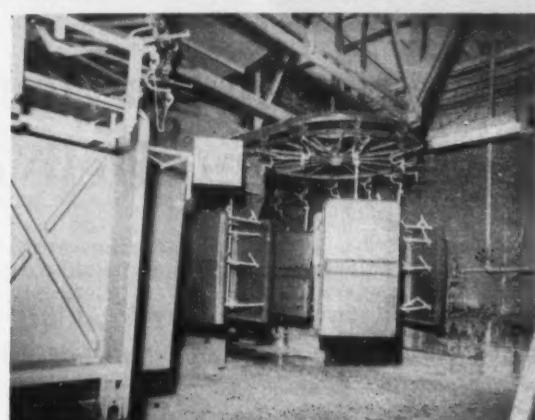
Three separate air replacement units supply the air required for the spray booths and enclosed room areas. Air is drawn in from

the out-of-doors through large fresh air inlets projecting through the building roof and then passes through continuous oil bath filters, over the gas burners, and finally through replaceable-type filters to spray booths and room area. Sufficient air is brought into the room to create a slight pressure outward to keep dirt from entering.

Paint is supplied to the spray booths from a central mixing and storage room. Storage racks are 50 ft. long and located so the drums are rolled toward the mixing tanks as they are needed, automatically using the oldest paint first. Ten DeVilbiss mixing tanks are required for the prime and different colored enamels used.

Paint is filtered before entering the mixing tanks, filtered on the circulating lines by fin-type filters in the mix room, and again by cartridge filters at the spray booths. The mixing room temperature is held at 80° F. and paint heaters on the circulating lines bring the temperature of the paint up to 170° F. for spraying. In order to maintain the proper viscosity for spraying, separate circulating lines supply the electrostatic and hand booths.

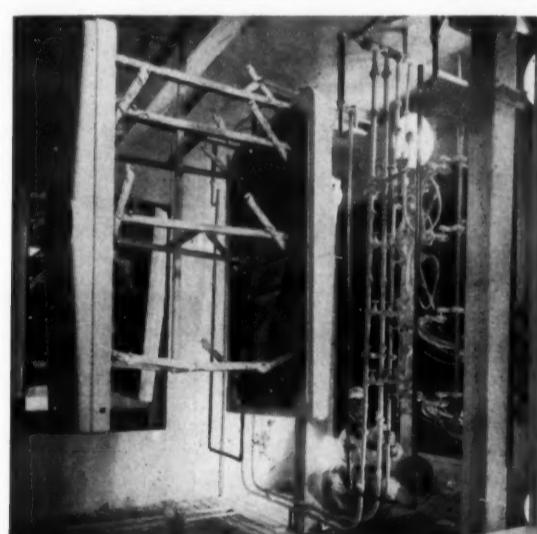
All parts are inspected as they emerge from the finish bake oven and film thickness is checked periodically. Film thickness is approximately 2 mils: .8 to 1 mil for the primer, and 1 mil to 1.2 mils for the finish. Actual production parts are used for humidity and salt spray tests.



UPRIGHT FREEZER DOORS are shown passing into the dry-off ovens, part of the Bonderite process.



UPRIGHT FREEZER DOORS emerging from the finishing department are carefully inspected under bright fluorescent lights. The technician watches and feels carefully before delivery to the assembly lines for any imperfection that will cause the door to be returned for re-finishing.



HERE FREEZER DOORS, moving on an overhead conveyor, are about to be sprayed by the robot spray guns. The enamel particles are magnetized by the inverted U-shaped grid, and thus are permanently attracted to the metal. Result is a smooth and chip-resistant finish.



NO MAN FROM MARS—he is a paint room technician, wearing an asbestos suit, who has (left) replaced a hanger on the conveyor line carrying units through the paint system. On the right he has just made an adjustment in the Despatch A type bake oven, equipped with two direct gas-fired burners.



One of the marks
of quality on...
Amana Freezers

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Make the Proper Installation

95% of Freezer Service Calls Can Be Cut By Training Delivery Men Properly

AMANA, Iowa—Ninety-five per cent of dealers' service calls on freezers can be eliminated by training delivery men to properly install them, and to instruct consumers in proper operation of the freezer.

This was the conclusion of Charles E. Nichols, service manager of Amana Refrigeration, Inc. as he reviewed findings of a survey of dealer service calls. The survey examined causes of service calls, and methods for eliminating them.

"Although the total number of service calls on Amana freezers was exceedingly small," Nichols said, "we believe the figure can be reduced even still further and thereby effect an additional saving for the dealer."

Installation Failure**Causes 79% of Service Calls**

Seventy-nine per cent of service calls on freezers, 10 or more cubic feet in size, result directly from the failure of delivery men to properly install the freezer, Nichols found. This was especially true with upright freezers.

Sixteen per cent of calls can be attributed to consumers' lack of knowledge concerning operation of

the freezer. Here are some of the principal mistakes by delivery men that led to unnecessary service calls, as revealed by the survey:

Be Sure Unit Is Level

1. They failed to install the freezer on a solid, level surface, so that the cabinet's four feet are supported evenly. Failure to install the freezer in the correct position, with all four corners of the base on a level plane, causes distortion of the cabinet and creates misalignment of the latch with the strike and of the door gasket with the face of the cabinet. This frequently causes an air leak past the gasket.

2. They failed to install the large freezers on a floor strong enough to support the unit's four feet on a level surface. They failed to recognize that a loaded freezer with 500 to 600 lbs. of food requires a strong floor. When the level of the freezer is altered by sagging of the floor, cabinet distortion and misalignment result.

3. They failed to make certain that there would be an adequate supply of the proper current at all times. When freezers were

plugged into overloaded circuits, or onto inadequate wiring, their operation was impaired and calls for service resulted.

4. They failed to completely examine the installed freezer to make certain there was no concealed damage that could interfere with normal operation; or they failed to check operation of the unit, functioning of the fan blades, sealing of the door gasket, and operation of the latch.

Service calls were repeatedly traced to the failure of delivery men to check these points, Nichols said.

**Customer Instruction
Vital to Good Service**

Second major cause of service calls, he pointed out, was the consumer's lack of knowledge concerning operation of the freezer. This shortcoming, too, could have been overcome by training delivery men to instruct consumers. In one area where this was done, Nichols declared, 90% of this type of call was eliminated.

One group of service calls centered around the build-up of frost. Because consumers had not been

told that more frost necessarily builds up on the upper shelves than on the lower shelves, when this normal occurrence took place, they phoned for a serviceman.

"More frost on the upper shelves is normal," Amana's service manager explained, "because whatever little warmer air there is in the freezer will rise and its moisture will solidify as frost on the upper shelves. Similarly in chest freezers, it is normal for most of the frost to form on the upper part of the liner."

"Further, many service calls resulted because women hadn't been shown the scraping method of removing frost," Nichols continued. "A freezer operated at proper temperature will seldom need defrosting by melting."

"Defrosting a freezer is an entirely different matter than defrosting a refrigerator, and housewives must be told this by the delivery crew," he insisted.

**Defrosting Methods
Must Be Taught**

If housewives were shown the scraping method of removing frost, most of the service calls about reported defrosting troubles would disappear, Amana's service manager said.

Defrosting service calls also result from improper installation, he added. Excessive frost may be caused by a leaking door gasket, an improperly levelled installation, or a sagging floor.

Other service calls that can be avoided by proper education of the housewife occur when the housewife:

1. Asks how to read the thermometer;

2. Fails to understand the necessary low noise level inherent in all large freezer operation;

3. Fails to understand how to set the temperature control;

4. Thinks the control must be set at a colder level for the fast freezing of foods.

Delivery Man Is Key

Why does Amana's service manager think that the delivery man is the key to the entire service problem? Because in several areas where dealers' delivery men properly install freezers and then instruct the new owners in the correct method for operating the freezer, service calls have been reduced by more than 90%.

"Although continuing training of the serviceman is so important," Nichols concluded, "training of the delivery man to perform his two significant jobs, proper installation and instruction of the consumer, should be the first item of business on the service agenda of every dealer and distributor."

**Owner's Manual Serves
As Installation Guide**

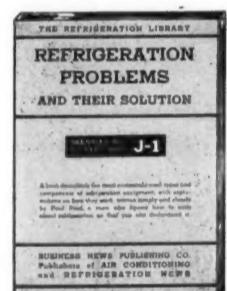
AMANA, Iowa—To promote proper installation of freezers, Amana's Consumer Education Div. has just issued three new Freezer Owner's manuals. One covers the Stor-Mor 12, 15, and 19-cu. ft. upright freezers, the second the 25-cu. ft. upright, and the third the 8 and 14-cu. ft. chest freezers.

Each is designed to serve as a guide to the delivery man as he installs the freezer, and as he instructs the housewife in the proper use of the unit. Then the manual serves as a permanent reference for the freezer owner.

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by PAUL REED

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Home Economics Program Promoting Freezers Includes Varied Activities

AMANA, Iowa—"A new and vital role in the field of freezer merchandising is being played today by the home economist, and home economics activities," according to Mrs. Sara Walls, director of Amana Refrigeration's home economics program.

Amana's staff of field home economists regularly conduct consumer demonstrations and freezer parties sponsored by local Amana dealers.

Kit for Food Party

To promote attendance, a complete kit containing materials necessary for promotions of this type and offering a full plan for securing publicity, has been developed for use by dealers.

The dealer sponsoring the home economist demonstration is supplied with a booklet entitled "How to Profit with a Food Party," outlining proven procedures for planning the promotion, securing publicity, staging the demonstration, and making the follow-up.

Attendance Builder

The kit also includes invitations, newspaper mats to publicize the demonstration, suggested newspaper releases, spot announcements for radio and television, registration cards, window streamers, posters, display tags for use in the store, and suggested letters for preliminary follow-ups.

"In short," Mrs. Walls reports, "the kit includes all the successful, necessary selling tools for a home economist promotion that is sure to provide Amana dealers with a 'pre-sold' list of sales prospects."

Mrs. Walls outlined other services being offered on consumer, dealer, and distributor levels:

Bulletins, Other Services

1) A bulletin for freezer owners listing freezer recipes, suggestions on packaging, seasonal hints for processing foods for the freezer, and news of latest developments by the freezer industry;

2) Training classes for home economists to better equip them for field work with dealers and distributors;

3) Special field work by home economists to aid distributors and

dealers with promotional demonstrations and freezer parties.

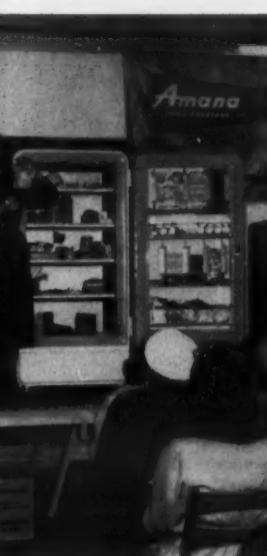
Through its periodic "Ann MacGregor Bulletin," Amana has established a personal relationship between the manufacturer and the actual freezer owner.

The bulletin, sent to freezer owners at no cost, for as long as they desire, is aimed at helping the housewife get the most from her freezer. Freezer owners are also encouraged to write to Ann MacGregor for any help with their freezing problems.

In addition to the large volume of correspondence developed in connection with freezer utilization, letters also are received requesting contact with friends and relatives who are freezer prospects. The leads, of course, are referred to dealers.

Recipes and User Tips

Another feature of the home economics service for the consumer is the complete and authoritative freezer instruction book furnished with each freezer, and a freezer cook book containing 365 freezer recipes, menus using frozen foods and a large number of general



FREEZER DEMONSTRATION is being conducted for a dealer by one of Amana's graduate home economists. Attendance-building material is provided for use by distributor salesman and dealer. A complete guide for such meetings, "How To Profit With A Food Party," also is provided for use by dealers.

niques, was recently initiated by Amana.

The program was instituted following the addition of home economists to the staffs of a large number of distributors and dealers.

"We felt that training for these people could better be accomplished by a centralized course, than by individual training in the field," Mrs. Walls explained.

New Training Program

The first three-day course has just been completed at the factory, with a large group of distributor and dealer home economists participating in the program. Future courses will be held at regular intervals.

Training covered specific instruction in sales features of freezers and methods for presenting them; lessons in home economist techniques; platform demonstrations; and the use of radio and television in freezer promotions.

Mrs. Kindall To Work With Toledo Freezer Dealers

TOLEDO—Mrs. Annette Kindall has been appointed home economist for the Toledo Merchandise Co. to work with dealers on their floors in the sale of Amana freezers.

Toledo Merchandise also announced that John Kleparek, formerly with General Electric Appliance, will join the major appliance sales staff.

Veteran Officials Guide Operations At New Plant

AMANA, Iowa—Officials experienced in the refrigeration field supervise operations at the new Amana plant.

Kermit Bridgeford, production manager, directs manufacturing activities. He is assisted by George Ehrmann, assistant production manager. Harold Smith is tool designer and Dave Hunter, planning superintendent.

Elmer Kraus and Ralph Zuber are production superintendents. Neal Stewart is paint superintendent, and Burton Baker is quality control supervisor. Frank Young is personnel manager.

Amana's engineering is directed by R. E. Moore, with L. M. S. Cooper as chief engineer. H. A. Whitesel is head of the advanced study section, and H. F. Lathrop is head of the air conditioner engineering section.

John Noe is purchasing agent, with Henry Myer his assistant. A. C. Schmieder is in charge of inventory control.

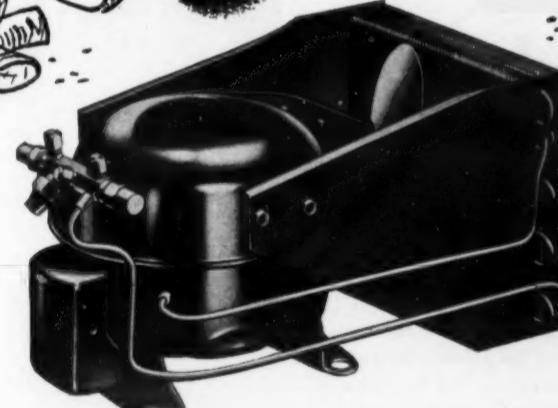
Harold Fry, assistant treasurer of the company, supervises accounting activities.

FOR FREEZERS and ICE CREAM CABINETS

The $1/4$ h.p. model (S4814LP as compared with S4814L) is $1/2$ " lower and $3/4$ " narrower at the compressor end. Condenser end is $1\frac{1}{4}$ " lower, $1/4$ " wider. Overall length is $3/8$ " longer. Allows a comparable reduction in the machine space.

SAVES MONEY!

Cost savings result from a less expensive condenser and elimination of fan shroud. Also, by mounting condenser and fan motor directly to compressor, the stamped base is eliminated.



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Room Air Conditioners Are Assembled On Straight-Flow Conveyor Line

AMANA, Iowa—Amana room air conditioners are assembled on a 300-ft. long powered roller conveyor. Sub-assembly lines are located on both sides of this straight-through line, at the exact points where the sub-assembly fits into main air conditioner assembly.

The assembly starts with the base pan weldment, which is the basic frame for the room air conditioner. It moves on the roller conveyor on a skid which later becomes the base of its shipping crate.

After the joints are hot sealed, the various parts and attachments are installed, including the heating element, insulation, fan motor, blower itself, heat exchanger, evaporator across the front of the unit, condenser, exhaust and fresh-air damper, and starting capacitors.

The Fiberglas insulation blocks heat transfer and condensation, and, in addition, helps deaden sound.

The blower and propeller fans are aligned to rotate in perfect synchronism. The compressor is bolted to the base pan, and then evaporator and condenser tubing is silver soldered to compressor connections, and the refrigeration system is complete.



HERE IS THE COMPLETED Amana room air conditioner. In this picture the single glider control is being adjusted to produce one of the six different temperature and humidity combinations capable of being produced by the air conditioner.



ONE OF THE MANY STEPS taken to insure that the refrigeration system of the room air conditioner will be perfectly sealed is performed here. A drier bulb is being silver soldered to an evaporator.



THE HEATING ELEMENT, which is standard equipment on all Amana room air conditioner models, is being attached to the evaporator shroud for a deluxe Amana room air conditioner.



THIS IS THE PROVING GROUND for the room air conditioner's insulation. In this high-voltage test, twice the rated voltage of the unit plus 1,000 volts is applied. Any insulation leakage or possible failures will show up in this test.

Tested in 'Hot Room'

The unit then is given a high potential test (double the rated voltage plus 1,000 volts) to make sure the electrical insulation won't break down in future operation, and a leak test to confirm that no refrigerant is leaking. Next the filter is slipped into place and the return air damper is connected. The unit is now complete.

Mechanical operation of the room air conditioner is checked by a technician who operates the glider control knob at all seven positions. He makes sure that the dampers open and close properly, that the fans operate at the right time, exhausts and heats properly, and that the noise level is at a minimum.

Electrical and refrigeration characteristics are carefully checked in a "hot room," which is an enclosure around 30 yards of the assembly line. In this room, constant 93° temperature and controlled humidity are maintained.

Simulate Power Supplies

Each room air conditioner is "plugged in" to an overhead rolling power cable, which moves along as the unit rolls on the conveyor. Each overhead cable connector is equipped to deliver 230 volts with a ground wire, 115 volts with a ground, and 115 volts without a ground—to simulate the power supply in different cities of the United States.

(Concluded on next page)

MODEL	VOLTS			
TESTS	READING	Check Column	Clock No.	Date
Leak-Base Pan				
Leak-Nitrogen				
High Potential				
Leak-Freon				
Blower Clearance				
Fan Clearance				
Exhaust Damper				
Ventilation Damper				
Control Operation				
Chassis Inspection				
Temperature Air On				
Temperature Diff.				
Velocity				
Amps Rated Volts				
Watts Rated Volts				
Amps Reduced Volts				
Watts Reduced Volts				
Watts "Noil"				
Noise				
Final Inspection				

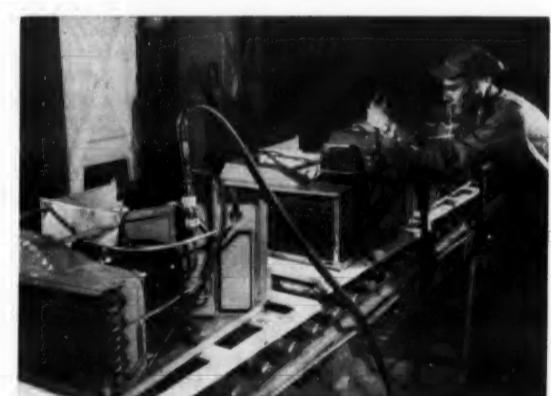
SERIAL NO. _____

MARK ACCEPTED TESTS WITH

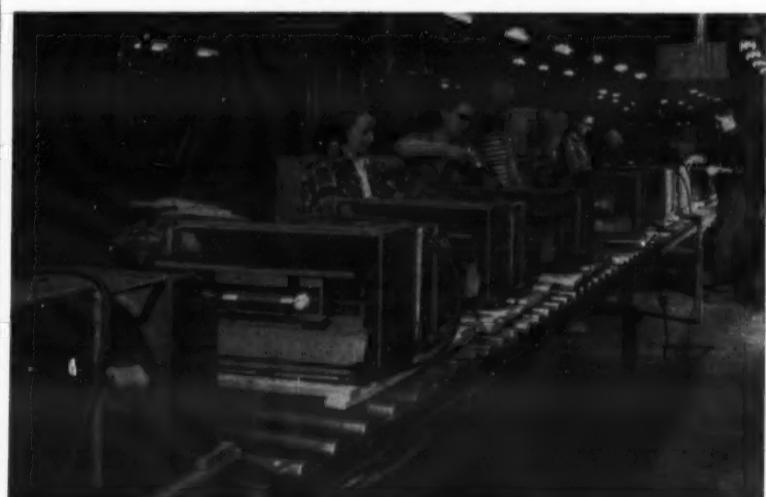
MARK UNACCEPTED TESTS WITH AND ATTACH REWORK

TAG WHICH SHALL REMAIN WITH THIS TAG

TEST RESULTS on every room air conditioner are recorded on this tag-chart. The record is attached to each unit before it undergoes the first of many inspections and tests performed to insure that performance meets the established standards.



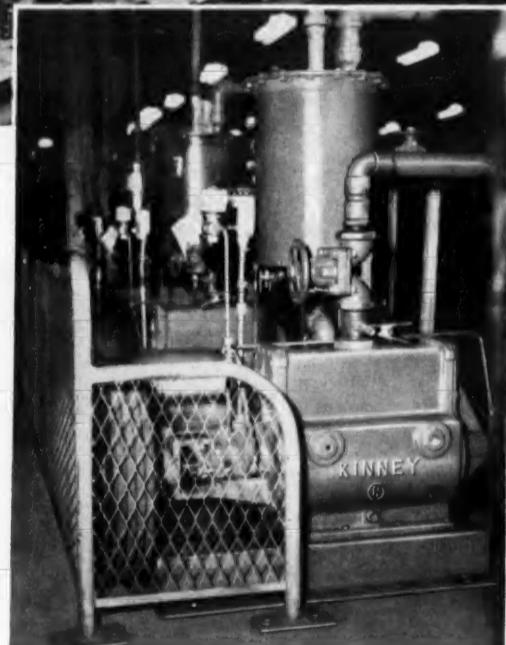
PRIOR TO CHARGING with "Freon" refrigerant, each Amana room air conditioner is evacuated. In the background can be seen the upright freezer assembly line.



THIS PORTION OF THE ROOM AIR CONDITIONER ASSEMBLY LINE shows units nearing completion. After intensive mechanical inspection it will enter the "Hot Room," for performance tests and checks on refrigeration characteristics.

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Conditioners Undergo Variety of Tests For Capacity, Air Delivery, Quietness --

(Concluded from Page 46, Col. 4)

After the unit has operated for 30 minutes, technicians accurately check: 1) watt consumption; 2) possible blower noise; 3) wattage consumption of heater unit; 4) performance when unit receives lower than standard voltage; 5) air delivery of unit with velometer; 6) cooling power of unit by comparing temperature of air entering and leaving.

Special Lifting Fixture

Any room air conditioner that doesn't measure up to standards established by the engineering department is rejected and returned to have its trouble corrected.

Accepted units move from the "hot room," straight along the conveyor line, to the final assembly area. Here an outer cabinet is placed over the operating unit by means of a lifting fixture designed by Amana engineers. Sides and top of the outer case are insulated with Fiberglas and other water-resistant materials for protection against sweating.

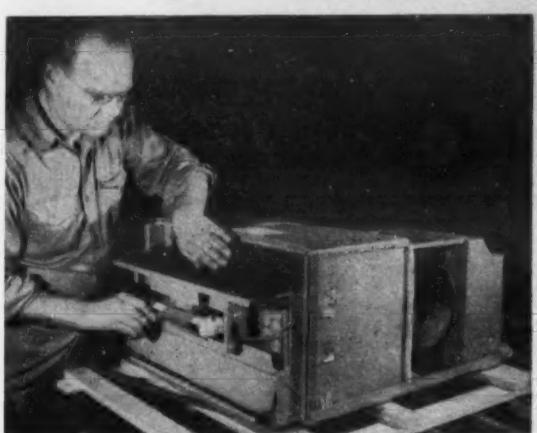


AN OUTER CABINET for an Amana room air conditioner is placed over the completed operating unit.

The job is simplified by use of a special lifting fixture designed by Amana engineers. It is being operated by the foot control in the foreground.



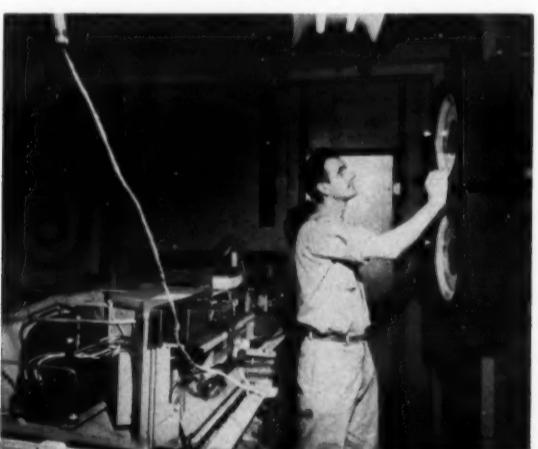
AIR DELIVERY of each Amana room air conditioner is checked by means of a calibrated velometer and nozzle attached to the fixture located directly in the path of discharged air.



THE ROOM AIR CONDITIONER ASSEMBLY LINE terminates immediately adjacent to the loading dock. In the background the units are being crated, in the foreground one is about to be loaded onto a freight car.



"QUALITY FIRST" is the byword as electrical and refrigeration characteristics are carefully checked in this "Hot Room." The temperature and humidity of this enclosure, which is located on the main assembly line, are automatically controlled.



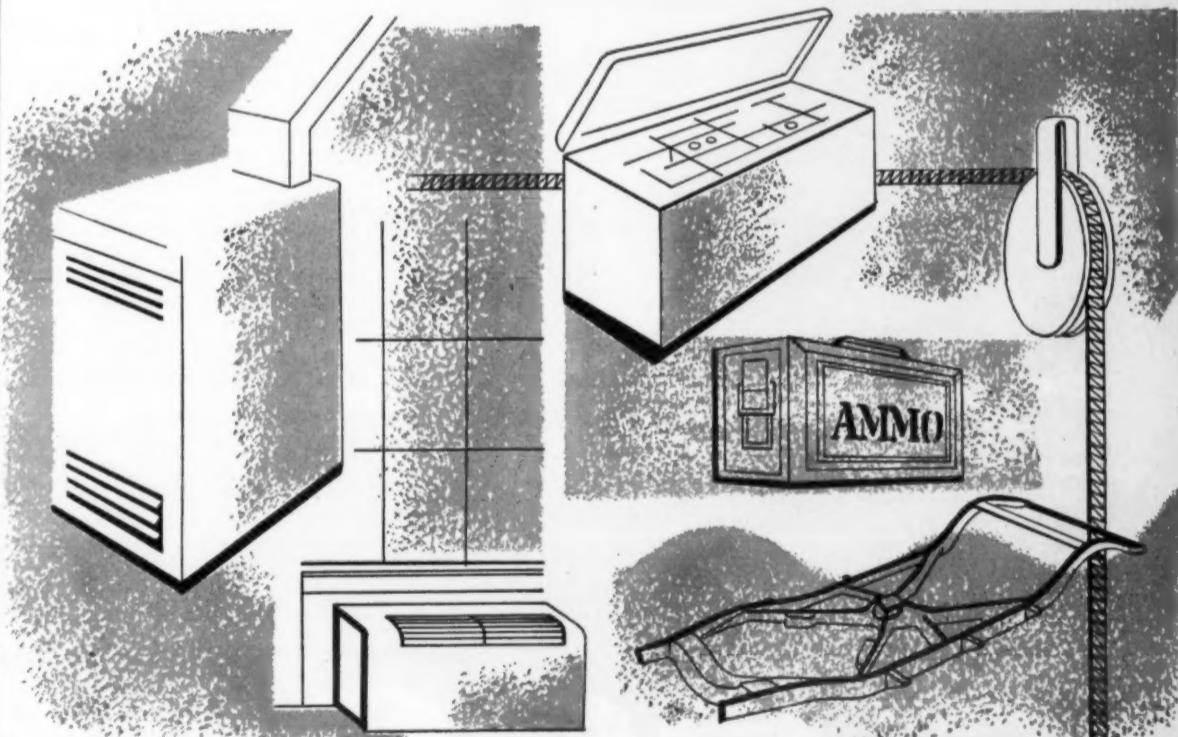
THE COOLING CAPACITY of each Amana room air conditioner is checked at this location in the temperature and humidity controlled "Hot Room." The technician here is reading the temperature difference between air entering and leaving the units, by means of an electronic indicator.

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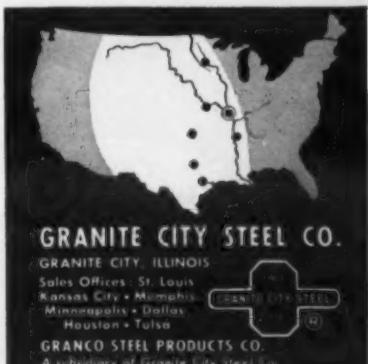
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Amana
Food Freezers
Room Air Conditioners

AMANA REFRIGERATION, INC.
AMANA, IOWA

As we view our newly expanded manufacturing facilities, and the constant flow of Freezers and Room Air Conditioners emerging therefrom, we are ever grateful to the many people and companies who have helped make our achievement possible.

We are grateful to the firms who designed and built the most modern and efficient tools and equipment for our new plant. We are grateful too, to the suppliers of the various materials and parts used in our manufacturing operations.

For their cooperation, their patience and their willingness to share our problems and aspirations, we of Amana always will consider our suppliers as partners in our progress.

Sincerely,

Geo C. Foerstner
George C. Foerstner
Executive Vice-President

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AMANA REFRIGERATION, INC., AMANA, IOWA

Refrigeration Problems and their solution

by Paul Reed

For Service and Installation Engineers



Paul Reed

Cold Weather Problems (7)

In the previous instalment we found that 40° is just about as low a temperature as we can have in the basement in which the condensing unit is located and still operate on a self-defrosting cycle with average temperatures in the cooler of about 37° to 38° F. This assumed also that the machine operation is controlled by a low pressure control.

Even with a 40° basement we may have short cycling and other troubles previously described, but we can usually "get by." Moreover, there will be little, if any, tendency for the refrigerant from the evaporator to pass down through the suction line and condense in the compressor crankcase during the idle cycle.

If the basement temperature drops below about 40° we begin to run into trouble in maintaining proper temperatures and humidity conditions in the cooler and in keeping the evaporator free of ice.

TEMPERATURE CONTROL INSTEAD OF L.P. CONTROL

In addition, we begin to have refrigerant condense into the compressor during the idle cycle and this can be the cause of very expensive trouble. If the basement temperature is below 40°, we can use a temperature control instead of a low pressure control.

The bulb of the temperature control is attached to the evaporator and set to cut in at whatever temperature is necessary to obtain complete defrosting, and to cut out

at whatever temperature is necessary to maintain the desired temperature in the cooler. This forces the compressor to operate, regardless of basement temperature.

Much of the refrigerant condenses from the evaporator into the compressor which may be, for example, at 35°, but the compressor will be forced to operate and furnish refrigeration to the evaporator during the running cycle.

The refrigerant condensed into the compressor is absorbed by the oil in the crankcase during the idle cycle, for the oil is cold, and cold oil will absorb and hold a great deal of refrigerant—much more than warm oil.

Then the temperature control starts the compressor. The suction pressure, which has been about 36 or 37 p.s.i.g., is suddenly dropped perhaps 10 p.s.i.g., to around 26 p.s.i.g. It is also characteristic of oil that it will hold more refrigerant at a higher pressure than at lower pressures. As soon as the pressure is dropped from 36 p.s.i.g. to 26 p.s.i.g., the oil is unable to hold as much refrigerant, so some of the refrigerant is released from the oil.

OIL SLUGGING IN COLD BASEMENTS

This causes the oil to foam and become violently agitated. Much of it gets up around the pistons and is pumped over past the pistons. It gets into the cylinder and is pushed through the discharge valves.

But oil is a liquid; it cannot be compressed as a gas can, so it cannot pass as rapidly as a gas through the small orifices in the discharge valves that were sized for the passage of gas. Thus, we have "oil slugging." Also, there may be some liquid refrigerant lying in the cold portion of the suction line in the basement.

In either case, the compressor which is designed to pump gas efficiently is forced to pump a liquid. The least that can happen is excessive wear of the pistons, rings, cylinder walls, bearings, pins, seal, and other frictional parts, due to the oil being thinned by refrigerant and therefore having less lubricating value.

Not uncommonly there is more severe damage to the compressor—breakage of rods, shafts, or pistons. The author has seen the spokes of the compressor pulley broken by the severe shock of "oil slugging." Oil slugging is rarely due to a defective compressor, but is almost always due to excessive refrigerant in the oil in the crankcase.

Oil slugging is usually at its

worst just after the compressor starts. Not only is most of the refrigerant and oil soon pumped out of the crankcase (probably leaving an insufficient amount of oil for adequate lubrication), but as the suction pressure is reduced and the crankcase warms up, the oil left gradually loses most of the refrigerant absorbed in it, and there is little foaming of the oil. Eventually the oil pumped over gets back to the crankcase, but in the meantime the wearing parts are operating without sufficient lubrication, and excessive wear results.

So using a temperature control on installations in which the compressor is located in a cold basement may be only part of the solution. It may result in much better refrigeration in the cooler than if a low pressure control is used, but it does not prevent the damage to the compressor.

SUCTION LINE SOLENOID VALVE TO PREVENT SLUGGING

One means of preventing the condensation of refrigerant from the evaporator to the compressor is by the use of a solenoid valve in the suction line. Preferably, it should be located near the cooler, so as to prevent refrigerant from condensing into the cold suction line in the basement.

This solenoid valve must, of course, be open during the running cycle, but closed during the idle cycle in order to prevent condensation of refrigerant from the evaporator to the compressor. That is, it must be open when the compressor is running, and closed when the compressor is not running.

Its wiring connections are therefore quite simple: It should be wired in parallel with the compressor motor, so that when the condensing unit starts, the valve opens and stays open as long as the compressor motor is running. It should close when the compressor motor stops, and stay closed all during the idle cycle.

The voltage of the solenoid valve should therefore be the same as that of the compressor motor. However, by using an auto-transformer, it is possible to use a solenoid of different voltage from that of the compressor motor.

Such a suction line solenoid may be used with a low pressure control, but the tube connection to the low pressure control must be tapped into the suction line between the evaporator and the solenoid valve rather than into the compressor crankcase or suction service valve on the compressor

as is customary. Otherwise with the solenoid valve closed during the idle cycle, the low pressure control would not be actuated by a rise in evaporator pressure.

One objection to the use of a suction line solenoid valve is its cost. Its orifice should have a free opening as large as the suction line so as not to restrict the flow of gas through the suction line. That large a solenoid valve may be rather costly.

LIQUID LINE SOLENOID NOT AS EFFECTIVE

Another way is to use a liquid line solenoid valve controlled by a thermostat, and a low pressure control to start and stop the compressor. This is the familiar "pump-down" method used in air conditioning.

It allows the use of a smaller and less costly solenoid valve but requires the additional control, so the total cost is apt to be about the same as that of the larger suction line solenoid valve.

Moreover, although the pump-down method is successfully used in air condensing, it is not so successful in medium and low temperature installations, the colder evaporators of which are more difficult to completely pump out than the higher temperature evaporators used in air conditioning. Also it is more difficult to assure a complete defrost during the idle cycle.

(To Be Continued)

Bell Named Gen. Mgr. Of Janitrol Divisions

TOLEDO — Appointment of Robin A. Bell as general manager of Janitrol Div. of Surface Combustion Corp. in Columbus has been announced here by Frank H. Adams, president.

Bell, general sales manager for Janitrol Div. since 1949, will direct all sales, manufacturing, and development operations for Janitrol Heating and Air Conditioning, Aircraft, and Automotive Divs.

A native of Parkersburg, W. Va., Bell was associated with Columbus Heating and Ventilating Co. from 1928 to 1931 as a design engineer and assisted in the development of the original gas-fired forced air furnaces and their installation.

Bell worked closely with the organization's research and development staff in designing the first suspension-type gas unit heaters used widely in industrial and commercial installations.

In 1931 Bell joined Surface Combustion Corp. when that firm acquired the gas equipment manufacturing facilities of Columbus Heating and Ventilating Co.

From 1932 to 1935 he was manager of the Rochester, N. Y. retail branch office for Surface Combustion. Bell was made eastern regional manager in New York City in 1935, to assist several gas utilities.

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Acid Formation In Refrigeration Systems

Some New Thoughts Are Presented In Talk on Causes and Possible Cures For Corrosive Action of Moisture In Units

LONG BEACH, Calif.—"Freeze-ups" of expansion valves or capillary tubes may be the first obvious signal that there is moisture in a refrigeration system, but the chances are that the moisture has been causing a corrosive action in the system long before that time, stated John Bopp, chief chemist, Refrigeration Div., Ansul Chemical Co., in a talk at the ARI Long Beach Educational Conference.

Titling his talk "Let's Not Bury Our Heads In the Sands," Bopp pleaded for a better recognition on the part of refrigeration servicemen of what moisture does in those systems that use a refrigerant having a relatively high water solubility factor. The higher solubility permits a greater ultimate acid concentration without freezing warning.

Worse In Sealed Units

The corrosive effect of moisture in sealed systems is much more likely to cause breakdowns in sealed systems than in open systems, he pointed out.

Bopp said that tests made by Ansul have shown that whenever the amount of moisture in the

liquid "F-12" refrigerant exceeds 15-20 parts per million, regardless of whether it is in a low temperature or air conditioning application, that it is likely that corrosion is going on continuously within the system.

First step in the fight against moisture in refrigeration systems, of course, is to take steps to keep it out of the system. To be able to take preventive steps, it is necessary to know how moisture gets into a system, and Bopp listed the following as some of the main ways in which it enters:

How Moisture Gets In

1. Faulty seal caps on tubing.
2. Use of open funnels for charging oil into the system.
3. Shutoff valves left open.
4. Negligence in leaving valves open during servicing operations.
5. Use of driers which are wet.
6. Use of an open flame on the open end of tubing.
7. Any intake of air.
8. Thermal breakdown of the oil.
9. Condensation on tubing used in the system. Moisture will condense very readily on cold tubing.

Bopp cited an experiment showing

that on a 1 1/8 in. piece of tubing on which moisture had condensed, 10 drops of water were yielded after the tubing had been heated up. One drop of water will raise the moisture content of "F-12" 5 parts per million.

10. Unsealed charging hose.

11. Charging low side without using a drier in the line.

12. Any leak anywhere will introduce moisture into a system. The idea that moisture won't enter a system through a leak against the refrigerant pressure on the high side of the system is entirely false.

Any Leak, Anywhere

"Any leak anywhere in the system will permit the introduction of moisture," Bopp declared. A prime reason for this is the application of Dalton's Law (tendency of the vapor pressure of individual gases to equalize).

"If the outside relative humidity is high, the moisture in the air will tend to enter a system through any opening that it finds, even if it has to enter counter-current to the flow of refrigerant," said the Ansul research authority.



Service & Supplies

What is the result of water in the system? Bopp says that in a "Freon-12" system with an 80° F. liquid line temperature, if the water content is higher than 100 parts per million, the metal parts in the system will be subject to both rust and corrosion because free water is present.

Permissible Amount

If the moisture content is between 20 and 100 parts per million, says Bopp, the reaction of that much moisture with refrigerant can result in the creation of acid—hydrochloric acid and subsequent corrosion.

The acid eats away the metal until a sludge is formed, and it is this sludge which plugs up and fouls up various parts of the system. When sludge is found in refrigerant line driers or on valve plates, it is a sure sign that a moisture and acid condition has existed.

What Motor Burnout Does

Another cause of acid formation in a system is motor burnouts. The high temperatures that occur during the burnout helps create water and acid.

If the acid formed in the first burnout of a refrigeration compressor motor is not removed, Bopp pointed out, there will be subsequent burnouts, with each of the subsequent burnouts occurring in a shorter period of time than elapsed before the previous one.

The acids caused by such a condition can't be adequately removed by flushing out the system, Bopp said, but one effective method

is "deep drying" with an alumina base drying material which removes both acid and water under all operating conditions.

Acid soldering fluxes are another source of acid, it was stated.

Bopp warned against the use of carbon tetrachloride as an agent to "flush out" and dry a refrigeration system. Carbon tet is not usable for dissolving water. In fact, when warmed up in the presence of water it forms acid. Also, it hastens the breakdown of lubricating oils, promotes copper plating, and is toxic and hazardous to use.

Can Cause Oil Breakdown

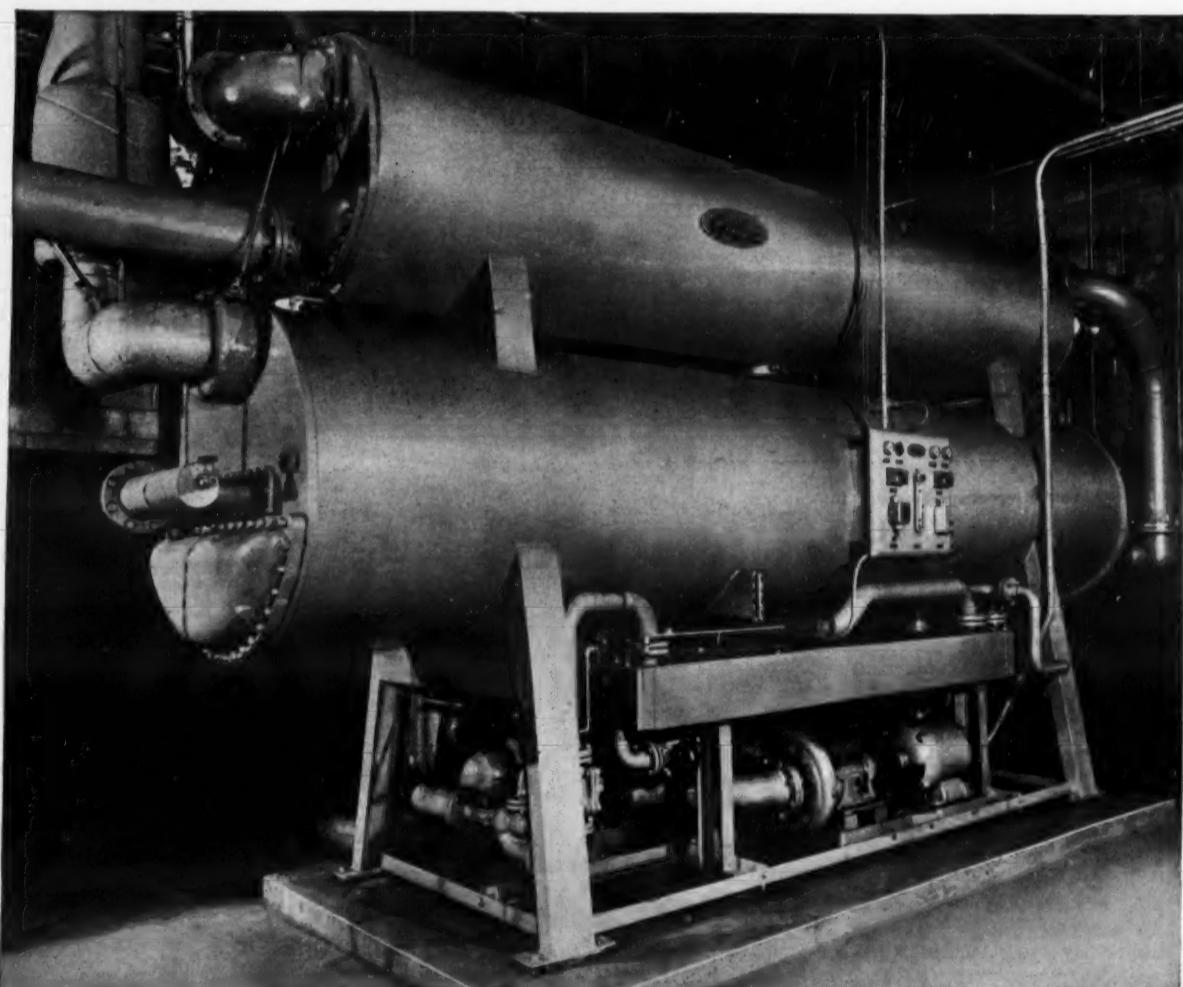
A moisture and acid condition in a "Freon-22" system is believed to be a major contributing cause of oil breakdown, and this may also be true of "Freon-12" systems where the temperatures are high enough.

The best answer to these problems caused by moisture is, of course, to keep the moisture out of the system. If moisture does get in the system, then the best answer is a thorough job of drying and removing the acid formed by the reaction of the moisture with the refrigerant.

"Deep drying" is the name which Bopp gives to a drying operation which will dry a refrigeration system to virtually 0 p.p.m.—the ultimate.

"Drying thoroughness is dependent not so much on how much moisture is removed from the system, but on the amount of moisture that is left in the system after

(Concluded on next page)



This 350-ton Carrier Absorption Machine is installed at the Joseph Horne Co. Suburban Store in Brentwood Borough, Pennsylvania.

Carrier Absorption Refrigerating Machine uses heat to cut cooling costs

—and Anaconda Cupro Nickel Tubes are again called on for economical quality performance in industry

Until recently, plant and building engineers have been hung on the horns of a cooling dilemma; how to use low pressure steam—frequently exhausted

as waste—for chilling water for air conditioning and process cooling. No economical way seemed to exist to harness this heat as a work horse for cooling.

Carrier Corporation, leading manufacturer of air conditioning and refrigerating equipment, found the solution in *absorption refrigeration*. In 1942, they installed the first pilot plant at the Carrier laboratory using water as a refrigerant and lithium bromide as the absorbent. Since then, a growing number of these large capacity units have been put into operation. They have few moving parts, are practically vibration-free, weigh less per rated ton, and adjust automatically to load.

Carrier selected ANACONDA Cupro Nickel Tubes for use in these machines

because of their excellent service record for trouble-free performance under all operating conditions.

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Rolling-in ANACONDA Cupro Nickel Tubes in absorber for new Carrier Absorption Machine.

Acid Formation--

(Concluded from preceding page)
the drier has supposedly done its job.

"Also, in 'deep drying,' a refrigeration grade desiccant must perform a second vital function which is as important as moisture removal.

Function of 'Deep Drying'

"It must remove by neutralization and absorption all of the acid formed by the action of moisture on the refrigerant."

Also, in "deep drying" the drier must remove moisture not only from the refrigerant, but also from the motor windings, oil, coil, receiver, and condenser, and all internal surfaces.

In systems using refrigerants with a greater water solubility, the drier should be sized larger in proportion to the increase in water solubility.

For example, in a system using a refrigerant that has 5 times the water solubility of "F-12" the drier used should be roughly 5 times as large.

Moisture Level Indicator

One of the most difficult problems with moisture in a refrigeration system is knowing (without opening up the system) whether the moisture content in the system is at a dangerous level.

Bopp showed an "experimental" type of moisture indicator for liquid line application in which a color change indicates that the moisture content is at a critical point. The color change is reversible. Blue indicates dry and pink indicates wet.

By-Pass Arrangement For Drier Installation

Also demonstrated was an arrangement whereby in large air conditioning systems it is possible to use a small drier by means of a by-pass arrangement. (See Fig. 1.)

This by-pass is placed in the liquid line, and part of the refrigerant will continue through the liquid line, and part will go through the by-pass line into which the drier is connected.

This arrangement not only permits the use of a smaller drier, but reduces pressure drop, and permits the changing of driers without interrupting the operation of the entire system. At the same time the filtering operation is completed. Once the system has been filtered clean and is free of acid and water there is no longer a filtering problem.



CONSTRUCTION OF BY-PASS ARRANGEMENT THAT PERMITS USE OF SMALLER refrigerant drier in air conditioning systems (described in the accompanying article) is demonstrated by John Bopp of Ansul Chemical Co. This arrangement, in addition to permitting use of a smaller drier, also reduces pressure drop, and permits changing of driers without interrupting the operation of the system.

Analogue Predicts System Performance

MEXICO CITY, Mexico—How the electrical analogy method can be applied to predicting the overall performance of a refrigerating system was described by Prof. Carl F. Kayan of Columbia University at the recent international meeting of the American Society of Mechanical Engineers here.

Because of the many simultaneous variables in force at any given time, predicting performance of a composite system "may be quite difficult," Prof. Kayan commented.

In his paper, he explains how the temperature and energy relationships of the component parts (compressor, condenser, evaporator, and expansion valve) can be developed in terms of known electrical resistances.

These values, in ohms, are coupled into an electrical circuit in which the total current from the compressor and evaporator branches in parallel equals that flowing in the condenser circuit.

Adjustable resistances permit setting up various composite systems and predicting their performance, according to Prof. Kayan.

Delta Names Cushing

TRENTON, N. J.—Delta Heating Corp. here has announced the appointment of E. S. Cushing as New England area sales representative. He will headquartered in Reading, Mass.

Cambridge Corp., Extreme Low Temp Firm, To Expand

CAMBRIDGE, Mass.—The leasing by Cambridge Corp. of a 40,000-sq. ft. industrial plant on the outskirts of Lowell, Mass. was announced recently by the company.

John W. Logan, president, said that production would be an extension of the work presently being done by Cambridge Corp., which

is a manufacturer of cryogenic or extreme low temperature equipment.

The building and a site of some six and a half acres of land were formerly owned by the New Industrial Plants Foundation of Lowell, Inc. The plant is a one-story, concrete and steel structure, located at Electronics Ave.

and Industrial Ave. in the southern section of the city. It is expected to be completed about May 15. At capacity the new plant will require the services of about 500 employees, Logan stated.

Cambridge Corp. is an engineering and manufacturing company owned jointly by Carrier Corp. and Arthur D. Little, Inc., research and development engineering firm here.

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What's New

When requesting further information on new products, please use "Information Center" form.

Panel Mounted Needle Valve Easy to Install

KEY NO. D-420

SKOKIE, Ill.—The PM Series, a new, easy-to-install panel mounted needle valve, has been developed by the Jas. P. Marsh Corp.

Designed to save both time and money, this new needle valve can be installed in a matter of seconds, the company says. The loosened packing nut and first holding nut are easily removed and



the threaded stem guide can then be slipped through the panel opening.

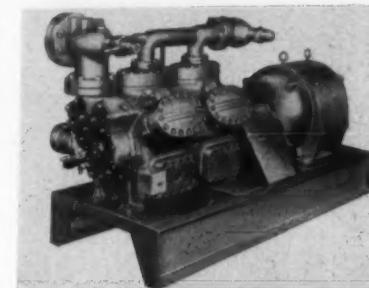
The first packing nut is then replaced and adjusted in relation to the second packing nut, firmly mounting the valve in the panel; assembly is completed with the addition of the packing nut and valve handle.

All PM Series needle valves are machined from extra heavy bar stock steel and are designed for a maximum working pressure of 10,000 p.s.i. for use on water, oil, or gas.

The valve stem is of 416 stain-

less steel, precision machined with fine pitch threads to permit close throttling. A special tailor-made packing called "Marpak" is used to produce a leak tight seal around the valve stem without binding, permitting easy operation of the valve.

Valve bodies are marked in accordance with M.S.S. regulations showing size, material, service symbol, and maximum pressure.



Reciprocating Compressor Has Special Oil Separator

KEY NO. D-422

SYRACUSE, N. Y.—A new 12-cylinder, 75 to 100-hp. reciprocating compressor for air conditioning and refrigeration duty featuring simplified installation and compactness has been announced by Carrier Corp. for immediate distribution.

The latest of 18 different Carrier reciprocating compressors ranging from 3 to 200 hp. and offering 43 different capacities provides many new advances in compressor design, according to the company.

The new compressor is designed for use at air conditioning temperature levels, for commercial or industrial refrigeration applications, or for ultra-low temperatures work down to -100° F.

Features include a special oil separator and control system which eliminates oil from the refrigerant circuit and prevents loss of oil on starting, full flow oil filters, and new type shaft seal, Carrier said.

The compressor automatically adjusts itself to varying loads. Changes in oil pressure depending upon refrigerant temperatures actuate capacity control mechanisms.

An external oil cooler may be attached if the compressor is to be used for low temperature.

The new compressor can be used with three different refrigerants—"Freon-12," "Freon-22," or "Carrene-7"—depending upon the application. Models adaptable for ammonia will be available.



Electronic Temperature Controller for 2 Zones

KEY NO. D-423

PHILADELPHIA—High sensitivity, long term stability, reliability, and low cost are listed as features of a new two-zone electronic temperature controller announced by Fielden Instrument Div., Robertshaw-Fulton Controls Co.

"The new unit is designed for a wide range of industrial applications in all industry where accurate temperature control is required," the company stated.

Because of its high sensitivity, the company said, the new controller is also suitable for use in laboratory work.

The Series 97 electronic temperature controller uses a resistance temperature detector element as a sensing device in a bridge circuit in conjunction with a high gain sensitive amplifier relay unit.

A single dial sets the temperature control point, and red and green lights indicate whether the temperature is above or below the set point. The single pole two-way control contact will handle 220 volts at 5 amps.

Standard ranges are 0 to 100, 300, or 500° F. and C., but any range between the limits of -200 to 500° C. can be supplied in conjunction with an appropriate resistance bulb.

Sensitivity is 0.1° F. on all ranges. Only two vacuum tubes are employed and the unit is encased in a strong aluminum housing.



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What's New (Con't)



Automatic Scale Changing Feature of Volt-Ammeter

KEY NO. D-424

SCHENECTADY, N. Y.—A new hook-on volt-ammeter believed to be the first with automatic scale changing has been announced by General Electric Co.'s Meter & Instrument Dept.

Designed the AK-5, the pocket-size unit is designed to measure current and voltage quickly and accurately. Its automatic scale changing feature entirely eliminates the possibility of reading the wrong scale for the application.

The volt-ammeter has a current range of 5/20/80/350 amperes, embracing the extent of currents normally encountered in industrial and commercial circuits.

The five-ampere range permits load checks on fractional-horsepower as well as low-energy control circuits, the engineers said.

The instrument also measures a.c. voltage in three ranges (150/300/750) without auxiliary equipment, provides accuracy up to 3% of full scale, and withstands a voltage breakdown test of 4,000 volts a.c., it was stated.

The AK-5 will clamp around any conductor up to 2 in. in diameter. Its contoured trigger closes and opens the hook-on assembly, which is covered with insulation to help safeguard against grounding or short-circuiting.

The desired range and scale is obtained by turning the unit's switch knob. Current scales are marked in black; voltage scales in red for easy reading.

The G-E device is shock-resistant and is provided with screw-in voltage leads. It weighs 1 1/4 lbs. and is 9 1/8 by 1 1/8 in.



Lights Warns When Tray Fills on Dehumidifier

KEY NO. D-425

CLEVELAND—The new Viking Model 180 "Arid-Zone" dehumidifier, manufactured by Viking Air Conditioning, features an exclusive float control valve that turns off the compressor and turns on a red warning light when the water catch-tray is filled.

The model 180 removes up to 3 gals. of water every 24 hours in areas up to 10,000 cu. ft. When the water tray is full, the automatic mechanism goes into operation, switching off the compressor and flashing on the red safety light.

The automatic compressor shut-off in the new Viking dehumidifier prevents the water tray from ever overflowing, the manufacturer claims.

"The "suitcase-type" rustproof water tray is closed on five sides so that it can be carried vertically without spilling any water. If the unit is used in only one location constantly, it may be fitted with a permanent drain attachment that empties the tray automatically.

The lightweight model 180 can be carried to any room by its chrome handles. Its compact size and gunmetal brown metallic baked enamel finish make it unobtrusive in any location, the company says.

Since the motor operates on standard alternating house current, it may be plugged into any convenient electrical outlet.



Ingersoll-Rand Has Air Conditioning Motor Pump

KEY NO. D-427

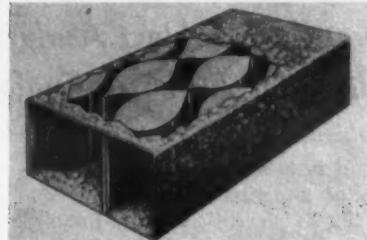
NEW YORK CITY—Ingersoll-Rand Co. announces a new air conditioning centrifugal pump known as the 1/4 KRVSA Motorpump. It is a single stage, 3,450 r.p.m. unit with a keyed, cap screw type impeller attachment for positive fastening.

The smooth bronze, die cast, balanced impeller has a built-in shaft sleeve to prevent motor shaft corrosion. Standard jet pump motors 1/3 through 1 hp. are used, and the pump will deliver capacities to 48 g.p.m. at heads to 100 ft.

A unique mechanical seal consisting of a rotating ceramic face against a stationary "Teepleelite" face prevents stuffing-box drips and eliminates motor overloads.

This new Motorpump is specifically designed and constructed for air conditioning and refrigeration service, the company said.

'Aircoustat' Quiets Fan Noise In Air Conditioning



KEY NO. D-426

formed-on flanges can be provided if desired, the company further stated.

The manufacturer points out that Aircoustat is available in 11 standard sizes for use with different styles and sizes of ducts, and in three types to meet any desired conditions.

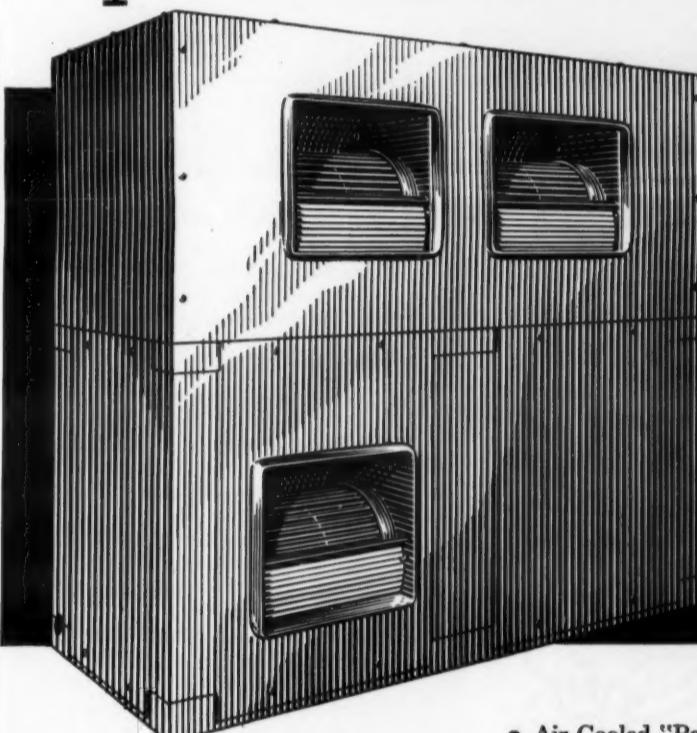
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Air-Cooled "Packaged" Air Conditioners, in 2, 3 and 5 horsepower sizes, supplement the long-established Chrysler Airtemp line of six water-cooled models, 2 through 15 horsepower. They constitute an important new reason why it will pay you to sell Chrysler Airtemp. Check the additional reasons listed at left. Then fill in and mail the coupon for complete details!



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Evaporative Cooling-2

Engineering Approach to Subject Analyzes Advantages, Limitations for Air Force Conference

By S. F. Duncan, Director of Research and Development, Farr Co.*

Editor's Note: This is the second instalment of the paper on evaporative cooling which was one of a series covering various phases of air conditioning given at the Refrigeration & Air Conditioning Engineer's Conference staged by Headquarters, United States Air Force, at the Pentagon in Washington, D. C. recently.

Following this discussion on evaporative cooling, other papers presented at the conference will appear in the NEWS.

Combination Systems

So far, straight evaporative cooling has been considered. Other systems combining dry or coil cooling with evaporative cooling have proven both beneficial to comfort and economical in a number of installations. The simplest of these is a combination of pre-cooling by coils using cooling tower water as the coolant, and evaporative cooling. This system can result in lower cool air temperatures and extend the range of atmospheric conditions under which comfort zone requirements can be met.

The system is shown in Fig. 5. The air first passes over a coil in which cool water from the cooling tower is circulating, the water and air flow being counter current

for best performance. After being cooled by the coil, the air is further cooled by the evaporative cooler.

Before any computations of performance can be made, the performance of the tower and the coil must be predicted. The cooling tower should be of the forced or induced draft type to achieve the closest approach to wet bulb possible in a minimum of space. The coil must be multiple row, probably four or more rows deep, to be effective and it should be manifolded so that the counter current flow principle can be utilized.

Examination of performance data of cooling towers together with accumulated experience indicates that the water temperature coming off the tower can be taken at 7° F. above ambient wet bulb. In exceptional cases a 3.5° F. approach to wet bulb can be used.

Coil manufacturers and users affirm that a reasonable coil can cool air to within 8° F. of entering water temperature, but a 6.5° F. approach can be achieved. This then gives a 15° F. approach to wet bulb as a safe value and 10° F. as a minimum value for the dry-bulb temperature off the coil. Evaporative cooler efficiency will be assumed as 80% as before.

Constant Moisture Content

The cooling of the air that takes place in the coil will be at constant moisture content. The method of determination of the final air condition is shown on Fig. 6. For purposes of comparison the examples shown on Fig. 2 are used. Assume that weather conditions are 90° F. d.b. at 70° F. w.b. For straight evaporative cooling the process starts at (a) with a wet-bulb depression of 90 - 70 = 20° F. Cool air temperature will be 90 - .80 x 20 = 74° F. at (b).

The mixing process terminates at 79.5° F. at (c) after a temperature rise in the cooling air of 5.5° F. With cooling tower and pre-cooling coils the process starts at (a) but proceeds along a constant moisture line to 70 + 15 = 85° F. d.b. and 68.6° F. w.b. at (d). In this condition the air enters the evaporative cooler.

The drop in dry bulb will be .80 (85 - 68.6) = 13.1° F. The cool air temperature will be 85 - 13.1 = 71.9° F. d.b. at (e). Using the same mixing temperature of 79.5° F. at (f) it is clear that the cool air can rise 79.5 - 71.9 = 7.6° F. instead of only 5.5° F. as in the straight evaporative case.

This represents only 72.5% of the air required for the evaporative case with the consequent saving in horsepower and ductwork.

Second Example

As a second example of the possibilities of pre-cooling, assume an outdoor condition of 100° F. d.b. and 68° F. w.b., a condition typical of Naval Ordnance Test Station at China Lake, Calif., and other places. The procedure for figuring this case is the same as just followed.

Fig. 7 shows the processes traced on the psychrometric chart. From (b) to (c), Fig. 7 is 5.6° F. while from (e) to (f) is 13.6° F. The ratio of air requirements to maintain 80° F. in the cooled space will be 5.6 + 13.6 = 41.2% or the pre-cooled installation affects a 58.8% reduction in air required over the straight evaporative case.

While this pre-cooling system adds a cooling tower and coils to the installation, the evaporative cooler installation is reduced. Furthermore the amount of air to be handled is less, though the total frictional resistance is raised by the coil, and a net saving in motor horsepower results. The largest saving on most installations is in the ductwork, particularly where

forced hot air heating is used in winter.

To give a clearer understanding of the differences in cooling installation design, consider that it usually works out that straight evaporative cooling air requirements are three times those for heating.

Two Duct Systems

One way of handling the ductwork in such a case is to put in two duct systems, one designed for the heating season and the combination designed for the cooling season. Such a system would require duplicate blower installations or expensive two-speed motors with suitable damper control to separate or combine the systems. Two sets of grilles would be required to get proper air distribution under both conditions.

The high cost of such a duplex system is obvious. Assuming that, in the case just analyzed in Fig. 7, the straight evaporative cooling job required three times the heating air volume. To do the same cooling job with the pre-cooling system requires only .412 x 3 = 1.24 times the heating air flow. With summer and winter air flow requirements as close together as this on preliminary design, it should be easy by compromise and refinement to arrive at a cooling air requirement that would be satisfactory for heating.

This air flow would probably be a bit higher than might otherwise be used for heating, but it certainly would not be harmful. This compromise would mean using single-speed motors with blowers and blower drives sized for the cooling air requirements. If it was considered desirable to reduce air flow for heating, it would be simpler to change a damper setting than change motor and blower sheaves twice a year.

Size for Heating

In case summer and winter air flows are different in a single duct system, ducts and grilles should be designed for proper air distribution during the heating season. Velocities should be chosen on the low side of the allowable range so that under the summer conditions no objectionable noise would be generated. For proper cooling, the single duct system should deliver air in or near the ceiling and the heating distribution must take this into account.

Expanding the study of this system a bit more, assume a cooling load of 100,000 B.t.u./hr., and the conditions of Fig. 6. Let the specific heat of the cool air be .24 B.t.u./lb./°F., a value that can be used in conjunction with the weight of dry air and make allowance for the additional weight of the accompanying water vapor.

With straight evaporative cooling the specific volume of the cooling air is about 13.77 cu. ft./lb. dry air. For a temperature rise of 5.5° F. the heat absorbed by the volume of 1 lb. dry air is $1 \times .24 \times 5.5 = 1.32$ B.t.u./lb. dry air or 1.32 B.t.u. for 13.77 cu. ft. of cool air. Total air requirements, using 100% fresh air as is common practice, is found from:

$$100,000 \times 13.77 = 17,400 \text{ c.f.m.}$$

Noting that for the pre-cooled

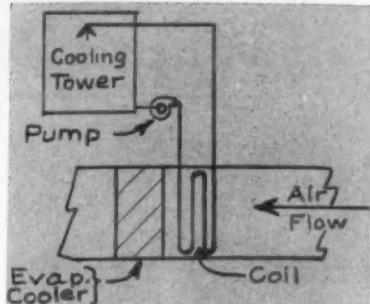


FIG. 5 shows the schematic arrangement of an evaporative cooler used in combination with a pre-cooling coil connected to a cooling tower.

case the specific volume is 13.70 cu. ft./lb. dry air and the temperature rise is 7.6° F., repeating the calculation for air required gives: $100,000 \times 13.70 = 12,500 \text{ c.f.m.}$

$$Q = 1 \times .24 \times 7.6 \times 60 = 12,500 \text{ c.f.m.}$$

The saving of just about 28% on cooler capacity, ductwork for cooling, and cooling blower motors, is enough to make this case worth studying by pricing the necessary coils, water circulating pump, and cooling tower.

Assuming the conditions of Fig. 7 and 100,000 B.t.u. heat load as (Continued on next page)

WHERE WATER IS A PROBLEM

heat-x



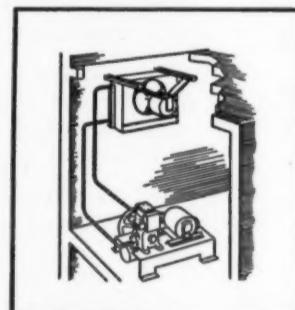
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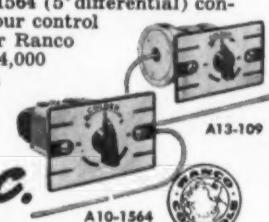
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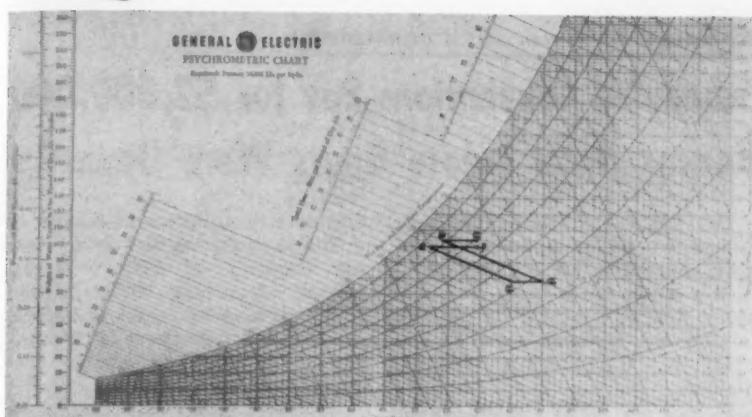


FIG. 6 shows how final air temperature is determined for the system pictured in Fig. 5.

Advantages of Combination System --

(Continued from preceding page)

before, the corresponding air requirements would be 17,800 c.f.m. and 6,800 c.f.m. The obvious saving is well worth the extra equipment. Another advantage of the pre-cooled system for the 100° F. d.b., 68° F. w.b., and 80° F. space temperature system of Fig. 7, is that point (e) is just about on the upper 50% comfort line while point (f) is very close to the 75% comfort line.

No Humidity Control

The combination system just described does not provide control of humidity. It is clear that mechanical refrigeration could be added to this system for humidity control and to remove small quantities of heat over peak loads and unusually high temperatures. The pre-cooled evaporative cooler is better as an air supply for a mechanically refrigerated air conditioning system than straight evaporatively-cooled air because of its lower moisture content.

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Figs. 6 and 7 show that at similar temperatures, the moisture content of the combination system, c, d, e, f is less than the simple system a, b, c. Proportioning the loads to be assigned to the pre-cooler, evaporative cooler, and mechanical refrigeration must be done on an economical basis so several designs should be compared.

This three component system has been applied to air conditioning a theater in Salt Lake City with complete success and a saving of some 20 tons of mechanical refrigeration. The addition of mechanical refrigeration makes recirculation possible insofar as it is economical.

When considering recirculation, an advantage of evaporative cooling as compared to mechanical refrigeration becomes apparent. For mechanical refrigeration in air conditioning systems, the amount of fresh air is kept to a minimum to keep the equipment down in size. This sometimes results in almost inadequate ventilation and odors build up. The 100% fresh air available through the use of evaporative cooling is certainly a desirable feature from the ventilation angle.

Field performance testing of evaporative coolers is a task not to be taken lightly. The difficulties lie in (1) measurement of air flow, (2) determining correct average temperature of the cool air, and (3) determining accurate average wet and dry-bulb temperatures ahead of the cooler.

The difficulties of field measurements of air flow are well known.

Overcoming them is a matter for another paper. Suffice it to say that the usual laboratory goes to some lengths to measure air flow, and field measurements may be unreliable.

Temperature measurements are taken with reasonable confidence. If glass thermometers are used, they should be graduated to 0.1° F. if possible. Dry-bulb readings downstream of the cooler should be taken using several thermometers shielded against possible droplets of entrained water and read simultaneously.

There is considerable stratification of air just downstream of the cooler caused by uneven pack resistance, uneven water supply, bypass, and other causes. If the heat added by the blower and motor is to be charged against cooler performance, temperature readings just downstream of the blower will be more uniform because of the mixing action in the blower.

Temperatures upstream of the cooler are not apt to be stratified since the air comes from outdoors. Thermometers used upstream must be shielded from radiation, however. Taking several sling psychrometer readings one after another and averaging them will usually be satisfactory. Here again, finely graduated thermometers should be used.

The reason for suggesting 0.1° F. as the graduation becomes clear when the 90° F. d.b. and 70° F. w.b. initial condition is considered. Efficiency under these inlet condi-

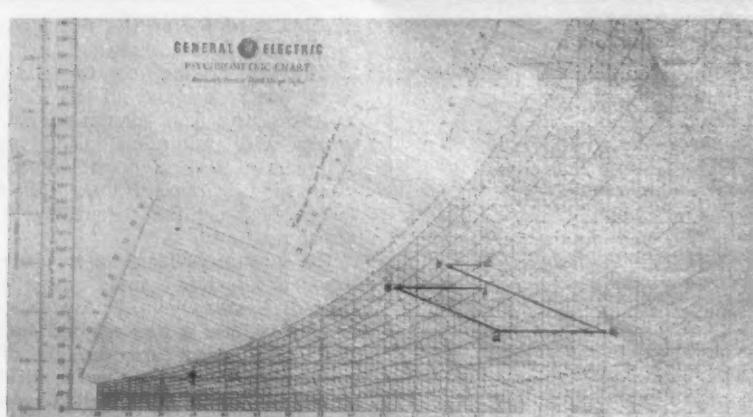


FIG. 7 shows air temperature determinations under another set of conditions for the system in Fig. 5.

tions is required to be 80% by some specifications. Assume that the 90° F. d.b. and the 70° F. w.b. temperatures are reading accurately but that, due to coarsely graduated thermometers, the downstream dry bulb is estimated 0.1° F. high. If the correct temperature was 74.0° F. and it was read 74.1° F. the computed efficiency would be 79.5% instead of 80.0%. Computing results assuming other errors of only 0.1° F. rapidly demonstrates the necessity of using finely graduated accurate thermometers.

Copper constantan thermocouples can be used with a high grade accurate potentiometer with careful control of cold junction temperature. The difficulty with thermocouples is that conduction along

the wire to the wet-bulb couples can introduce an error of almost a degree if precautions are not taken. The insulation of wet-bulb thermocouples is also important to prevent short circuits and the consequent erroneous readings.

Laboratory testing of evaporative coolers must observe the above precautions plus that of providing unstratified air to the cooler since artificial heat and humidification will probably be employed to attain the desired inlet conditions.

Readings should be continued for a period of at least 15 minutes of constant conditions or at least one-half hour if temperatures are varying slightly, say plus or minus 0.5° F.

(To Be Continued)

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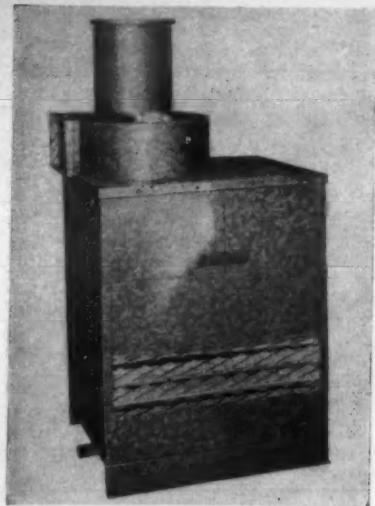
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Acme Expands, Improves Small Cooling Tower Line

JACKSON, Mich.—Addition of a 15-ton-capacity unit to its line of small cooling towers for homes, offices, and factories has been announced by Acme Industries, Inc. here.

Addition of this unit, called the model JACT, gives the air conditioning and refrigeration contractor a total of five sizes to choose from in the Acme line.

"It makes it possible to select a unit to match a small air conditioning system of a residential home or a cooling system for a group of offices," the company

said. "Capacities of the five sizes range from 3 to 15 tons.

"Besides adding to the line, Acme has redesigned all the units to afford the user maximum efficiency with minimum space requirements. Several possible locations for air outlets were called for to increase the versatility of the units."

The ever-increasing water problems of certain areas in the United States caused Acme to build this line, it was pointed out. The small units are capable of conserving 95% of the water used when no tower is installed and "will pay for themselves in reduced water costs, lower sewage taxes, and the like."

All the Acme units are galvanized after fabrication to make them impervious to extreme weather conditions, and suitable for indoor or outdoor installation. The blower and fan system "assures constant capacity—indoors with ductwork or outside, regardless of wind conditions," the firm said.

A brochure giving dimensions, weights, pump and fan characteristics, and sample selection procedures for all these units is available from the manufacturer on request.

Plan Cooling for Kessler Store

BIRMINGHAM, Ala.—Construction work has begun on a new Kessler store on Third Ave. at Five Points West. Adolph Kessler, president, said the new store will be completely air conditioned.



P. M. HOOVEN W. H. GRANT

Hooven, Grant Head New Marketing Regions for G-E

BLOOMFIELD, N. J.—Paul M. Hooven and William H. Grant have been named to head the two new marketing regions recently formed by the General Electric Co. Air Conditioning Div., according to Jack S. Beldon, manager of marketing of the division.

Hooven will be located in Atlanta, headquarters of the southeastern region, while Grant will be in Cleveland, headquarters of the east-central region.

Hooven has been with G-E since 1938 and has served the Air Conditioning Div. as sales representative to government agencies in World War II and the Korean War. He has spent the last two years as home heating and cooling sales representative in the Maryland and Virginia territory.

Grant, with G-E about a year, has an extensive background in business, finances, and air conditioning. After positions in finance management companies in Illinois, he was successively president of two auto firms and Midwest Heating Co., Deerfield, Ill.

The southeastern region includes states from Maryland through Florida while the east central region extends from western Pennsylvania through Indiana and Michigan.

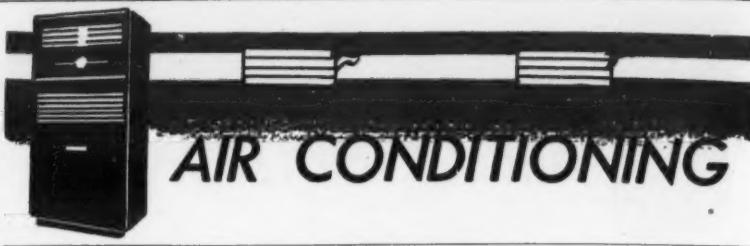
In announcing the two new regions, Beldon had cited an increasing sales load and the desire to distribute this load more evenly as the reasons for the expansion. The G-E division formerly employed a four-region national marketing pattern.

The national headquarters and major manufacturing plant of the General Electric Air Conditioning Div. is located in Bloomfield, N. J. This plant produces home heating and cooling equipment, packaged air conditioners and water coolers for commerce and industry, and the Weathertron (G-E's heat pump).

Westinghouse A. C. Div. Names Richmond Outlet

HYDE PARK, Mass.—Enterprise Heating & Air Conditioning Corp. of Richmond, Va., has been awarded a franchise as distributor for Westinghouse field assembled air conditioning equipment, according to W. B. Cott, sales manager of Westinghouse Electric Corp.'s Air Conditioning Div.

Headed by T. L. Kriete, president, the firm has been associated with the heating and air conditioning business since August, 1947. The firm serves Richmond and its surrounding counties.



Because It Was Air Conditioned

Scheduled Conventions Pay for \$2,000,000 Kansas Hotel Before Doors Were Opened

HUTCHINSON, Kan.—The new \$2,000,000 Baker hotel here has been completely air conditioned.

The modernistic hotel is a 12-story structure located on the site of the old Midland hotel in the heart of Hutchinson's business district.

Before the doors of the Baker officially opened, a return of funds invested by the people of Hutchinson was realized.

Because the hotel was air conditioned, hotel officials were able to bid and obtain almost 50 state, regional, and national conventions for this year. Ten conventions were booked for 1955 and several listed for 1956.

Raising of funds for construction of the Baker was a Hutchinson community project for almost 10 years.

Chilled water for air conditioning the entire building is provided by a large Carrier centrifugal refrigerating machine supplying 250 tons of capacity. The centrifugal refrigerating machine and the "Weathermaster" air conditioning equipment are located in the basement.

Carrier's "Conduit Weathermaster" system provides complete control of temperature and humidity year 'round in the hotel's 175 rooms by means of under-the-window Weathermaster units. Occupants may vary their weather to suit their own tastes. In addition, each guest room is equipped with a radio and television set, the

first such installation in Kansas.

The main dining room with seating capacity of 110, ballroom, private all-purpose rooms, attractive central lobby, spacious lounge, ground floor shops, and kitchen have been air conditioned by central station equipment.

Architect was McCrackin & Hiett of Hutchinson and associate architect was Neville, Sharpe & Simon of Kansas City. The consulting engineer was Howarth, Scott & Kinney, Kansas City; the general contractor, Dondlinger & Sons, Wichita; and the mechanical contractor, Stevens, Inc., Hutchinson.

Bendix To Air Condition New Scintilla Plant Annex

SIDNEY, N. Y.—More production line space, largely air conditioned, has been added to the manufacturing facilities of the Scintilla Div. of Bendix Aviation Corp.

A new factory addition now nearing completion will increase plant floor area by more than 6%—from 500,000 sq. ft. to 533,000 sq. ft., according to George A. Steiner, divisional general manager.

Construction of the new addition to be devoted to the precision manufacture of coils, condensers, electronic devices, and ignition components for a variety of uses was begun last October.

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Lower Prices Reflect Tax Cuts--

(Concluded from Page 1, Col. 3)
 inventory, the tax applicable to the inventories under the new rates, and that the dealer holding such articles has received reimbursement from the manufacturer prior to the date on which credit or refund is claimed, but not later than July 31.

New price schedules have been issued so far by Philco Corp.; Servel, Inc.; International Harvester Co.; Gibson Refrigerator Co.; Avco Mfg. Corp.; Hotpoint Co.; Westinghouse Electric Appliance Div.; Norge Div. of Borg-Warner Corp.; Admiral Corp.; Frigidaire Div. of General Motors Corp.; General Electric Co.; Amana Refrigeration, Inc.; Deepfreeze Appliance Div., Motor Products Corp.; and Kelvinator Div., Nash-Kelvinator Corp. (Kelvinator refrigerator prices were published in the April 5 issue of the News.)

Jordon Refrigerator Co. has indicated that its list prices of refrigerators and freezers would not change but costs would be reduced to distributors and dealers.

Revo, Inc. said that its prices would average \$20 lower than prices before April 1, but no specific prices were available. Perfection Stove Co. also announced price reductions on electric ranges and water heaters and other gas and oil appliances, but did not list the new figures.

New price schedules as announced by various manufacturers are as follows:

ADMIRAL		
REFRIGERATORS		
Model	New Price	Old Price
7D6	\$195.40	\$199.95
7D5	224.75	229.50
8D7	244.25	249.95
8D9	263.80	269.95
9D7	293.15	299.95
9D9	322.45	329.95
11D7	361.55	369.95
11D9	390.85	399.95
12D13	488.60	499.95
12D15	537.45	549.95
11C15	488.60	given
RANGES		
2DH3	\$166.60	\$169.95
2DH4	176.35	179.95
3DH8	195.40	199.95
3DH11	234.50	239.95
3DH12	258.95	264.95
4DL5	195.40	199.95
4DL8	244.25	249.95
4DL14	332.20	339.95
4DH5	322.45	329.95
4DH8	390.85	399.95
4DH15	459.25	469.95
32233-1	25.00	no change
rotary roaster		
MOISTURE CONDITIONERS		
DD5	\$136.25	given
DHD5	155.95	given
FREEZERS		
11DUF	\$390.85	\$399.95
18DUF	540.10	549.95
13DHFS	362.25	369.95
13DHF	421.85	429.95
17DHF	471.35	479.95
20DHF	540.10	549.95
AMANA		
CHEST		
Model	New Price	Old Price
80	\$279.50	\$289.50
140	no change	399.50
UPRIGHT		
12	\$399.50	\$419.50
15	499.50	519.50
19	599.50	619.50
AVCO		
CROSLEY REFRIGERATORS		
Model	New Price	Old Price
LF-7	\$162.54	\$169.95
SF-7	191.19	199.95
SF-8	220.28	229.95
SF-95	239.52	249.95
SF-105	287.35	299.95
DAF-105	339.19	349.95
CAF-105	383.02	399.95
DAF-125	430.91	449.95
CAF-125	487.75	499.95
TCAF-12	497.89	519.95

CROSLEY FREEZERS

SEF-3 (SDF-6)	\$258.48	\$269.95
SDF-8	297.13	299.95
CEF-9	335.25	349.95
UEF-13	449.76	469.95
SEF-15	412.03	429.95
CEF-15	450.29	469.95
CEF-20	613.05	639.95
UEF-20	630.71	649.95
ICF-1	47.68	49.95

CROSLEY RANGES

REA-3	\$163.71	\$169.95
REA-4	173.49	179.95
RE-E	191.72	199.95
RE-D	239.57	249.95
RE-PD	287.24	299.95
RE-PDO	354.07	369.95
RF-E30	191.44	199.95
RF-PD30	239.57	249.95

BENDIX DRYERS

DDFN-S	\$287.05	\$299.95
DDFN	267.96	279.95
DDE	229.96	239.95
JCD	254.88	279.95
DDFMS	287.05	299.95
DDFM	267.96	279.95

DEEPFREEZE

REFRIGERATORS AND FREEZERS

Model	New Price	Old Price
B86	\$269.95	\$279.95
C86	289.95	299.95
C146	439.95	459.95
C186	529.95	549.95
CU126	389.95	399.95
F10	229.95	239.95
G10	299.95	unchanged
G12	334.95	349.95
A10	389.95	399.95
A12	449.95	469.95

FRIGIDAIRE

REFRIGERATORS

Model	New Price	Old Price
AT-44	\$181.95	\$189.95
AT-61	181.95	189.95
ST-76	219.95	229.95
ST-761(Y) or 762(G)	200.95	209.95
ST-761(Y) or 762(G)	219.95	229.95
STD-91	267.95	279.95
STD-911(Y) or 912(G)	277.95	289.95
STD-911P	296.95	309.95
STD-911P(Y) or 912P(G)	306.95	319.95
STD-110	314.95	329.95
STD-1101(Y) or 1102(G)	329.95	344.95
STD-1101(Y) or 1102(G)	276.95	289.95
TD-1094	499.95	519.95

FREEZERS

HF-1092	\$384.95	\$399.95
HF-140	424.95	439.95
HF-200	529.95	549.95
Three upright models not listed.		

GIBSON

REFRIGERATORS

Model	New Price	Old Price
G-764	\$239.95	\$249.95
G-934	229.95	239.95
G-1054	279.95	289.95
G-1064	329.95	339.95
G-1164	344.95	359.95
G-974	364.95	379.95
G-1074	384.95	399.95
G-1084	484.95	489.95
TD-40	\$249.95	\$259.95

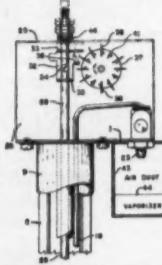
FREEZERS

HF-172	\$172.03	\$179.95
HF-348	181.58	189.95
HF-362	191.24	199.95
HF-387	258.11	269.95
HF-398	344.09	359.95
HF-421	324.95	339.95
HF-431		

PATENTS

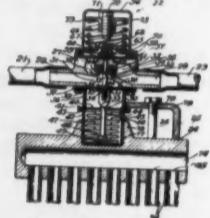
Week of January 5

2,664,604. AIR CONDITIONING APPARATUS AND LIQUID METERING DEVICE. George C. Hein and Joseph Hajek, Mars, Pa.; said Hajek assignor to said Hein. Application Jan. 21, 1950, Serial No. 239,948. 10 Claims. (Cl. 21-74)



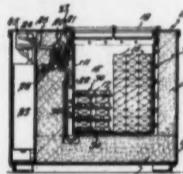
1. In air conditioning apparatus, an air duct having glycol vaporizer therein, and liquid metering means for supplying glycol to said vaporizer comprising a container for the glycol, a pump in said container, a conduit for delivering glycol from said pump to the vaporizer, and a timed drive for operating said pump to meter the flow of glycol through the conduit.

2,664,715. CONTROL VALVE FOR SPRAY SYSTEMS. William F. Borgerd, Evansville, Ind., assignor to International Harvester Co., a corporation of New Jersey. Application Dec. 29, 1950, Serial No. 203,450. 4 Claims. (Cl. 62-3)



1. In combination, a refrigeration system having a condenser as one member of the high side, means for supplying a cooling liquid to said condenser, a valve for controlling the operation of said means, said valve comprising a valve body having an inlet chamber and outlet chamber connected by a valve port, a valve member adapted to open and close said valve port, a tubular spacer member having low heat conductivity properties secured to said body, a wall member closing one end of said spacer member, a housing secured to said spacer member, whereby said housing is thermally separated from said valve body, a thermostatic power element in said housing, and means for connecting said valve member and said power element, said valve positioned with said housing in heat exchange relationship with a portion of said high side, said power element moving said valve member to open position when said portion reaches a predetermined temperature.

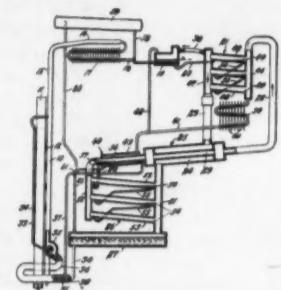
2,664,716. REFRIGERATION APPARATUS AND METHOD EMPLOYING COLD ACCUMULATOR. Nils Magnus Warman, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden, a corporation of Sweden. Application Feb. 26, 1949, Serial No. 78,490. Claims priority, application Sweden March 2, 1948. 10 Claims. (Cl. 62-35)



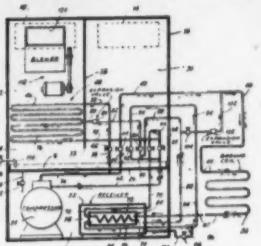
1. In a method of refrigeration, the steps which comprise artificially producing a refrigerating effect by a refrigeration system at a place of cooling which is disposed exteriorly of a thermally insulated space and in thermal relation therewith to maintain such space at desired low temperature to preserve matter therein below the freezing temperature of water when the load in said space is in a first range, positioning one or more readily movable bodies of eutectic solution in the interior of said space when the load therein is in said first range so as to congeal

said body or bodies of solution, and while said congealed body or bodies are positioned within said space, resiliently holding the latter in thermal contact with matter so as to promote cooling of such matter below the freezing temperature of water in conjunction with said artificially produced refrigerating effect, especially when the load in said space is in a second higher range.

2,664,717. ABSORPTION REFRIGERATION SYSTEM OF THE INERT GAS TYPE. Sigurd Mattias Backstrom, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden, a corporation of Sweden. Application April 22, 1950, Serial No. 157,986. Claims priority, application Sweden May 5, 1949. 9 Claims. (Cl. 62-115.5)



unit during heating cycles, said lower half section only providing an evaporator unit during cooling cycles; a coil buried in the ground remote from said casing, said coil providing an evaporator unit during heating cycles and a condenser unit during cooling cycles; conduit means



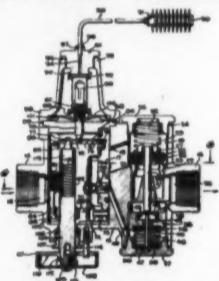
for establishing fluid inter-communication between said compressor, said receiver tank, said heat exchange unit and said coils; a plurality of manually operable valves incorporated in the conduit means for regulating the flow therethrough of a volatile refrigerant hermetically sealed therein; a vertical wall in the casing for dividing said upper compartment into an inlet and an outlet chamber portion, said first named coil being mounted in said outlet chamber portion; and a blower assembly also mounted in the outlet chamber portion of the casing above first named coil.

2,664,846. LIQUID LINE INDICATOR. Robert A. Grey, Jr., Port Huron, Mich., assignor to Mueller Brass Co., Port Huron, Mich., a corporation of Michigan. Application Nov. 27, 1951, Serial No. 256,409. 7 Claims. (Cl. 116-117)



1. A fluid line indicator comprising first member having a passageway extending therethrough and having an end portion, said member having an aperture through a wall thereof opening into said passageway, a second member having a passageway and having an end portion, said end portions being constructed to be telescoped together, lost-motion locking means holding said telescoped end portions together and permitting limited relative movement therebetween, a transparent tubular member within said first member passageway having an intermediate portion viewable through said aperture, and means immovably securing and sealing one end portion of said tubular member to said first member and immovably securing and sealing the other end portion of said tubular member to said second member and spacing said first and second members to an intermediate position of said lost-motion means whereby the distance between said first and second members throughout the range of said lost-motion means by any change in length of said tubular member is determined by said transparent member.

2,665,072. VALVE FOR CONTROLLING THE ADMISSION OF REFRIGERANT TO EVAPORATORS. William A. Bay, North Hollywood, Calif., assignor to General Controls Co., a corporation of California. Application Feb. 22, 1949, Serial No. 78,576. 4 Claims. (Cl. 236-90)



1. In an air conditioning unit, an outer casing disposed entirely within a room which is to be conditioned, a refrigeration system positioned within said casing, means for securing said casing to a wall of said room with the lowermost portion of the casing being spaced above the floor of said room, said casing having a wall located adjacent said room wall, a leg member having one end pivotally secured to said casing wall and an opposite end engaging said room wall, and movable means secured to said leg member intermediate said ends which abuts said casing wall and holds it in parallel relationship to said room wall.

2,664,731. REVERSE CYCLE HEATING AND COOLING SYSTEM. Dominic T. Ingatiola, St. Louis, Mo. Application July 11, 1951, Serial No. 236,158. 4 Claims. (Cl. 62-129)

1. In a reverse cycle system for either heating or cooling an enclosed space: refrigeration apparatus including a compressor mounted in the lower compartment of a casing; a receiver tank also mounted in said lower compartment; a heat exchange unit supported within said tank; a coil mounted in the upper compartment of said casing, said coil including an upper and a lower half section, both said half sections together providing a condenser

1. In a valve structure: a valve body having an inlet passage and an outlet passage; means forming a valve seat between the passages; a valve closure cooperating with the seat; a stem extending to the closure for forcing the closure away from the seat; and means for moving the stem, comprising a piston; said piston having a restricted port between opposite sides thereof; and means for admitting fluid to one of said sides of the piston to urge the piston to valve opening position; said body having means forming a port between the other side of the piston and said outlet passage, said piston when in valve opening position serving to close said port.

Week of January 12

2,665,456. REFRIGERATOR DOOR. Evans T. Morton, Chicago, Ill., assignor to Admiral Corp., Chicago, Ill., a corporation of Delaware. Application May 12, 1950, Serial No. 181,563. 1 Claim. (Cl. 20-35)



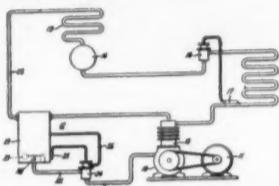
In a refrigerator door having an outer shell and an inner panel, said shell having marginal portions provided with a stiffening flange extending towards the inner panel and having a free side edge, said inner panel having marginal portions provided with a stiffening flange extending inwardly of the door in spaced relation to the free side edge of the stiffening flange of said shell at an abrupt angle thereto, and a breaker strip formed as a unit of elastic material and comprising an elongated outer side portion constituting a cushion member and having an inner surface bearing against the outer surface of the stiffening flange of the shell, a flat strip integral with the said side portion and projecting laterally therefrom substantially in horizontal alignment therewith for extending across the space between said flanges and with its outer side edge portion bearing against the outer surface of the inner panel beyond the stiffening flange of the panel and constituting an outer gripping jaw.

a rib extending along the rear surface of said strip at the junction of the inner side edge thereof with the said cushion member and carrying a flange spaced rearwardly from the inner surface of the cushion member and together therewith defining a channel into which the free side edge portion of the stiffening flange of said shell fits, and a hollow panel-engaging member back of said strip extending the full length thereof and including a rear wall having an inner side edge integral with said rib and along its outer side edge being formed with a lip constituting a jaw for engaging across the rear edge of the stiffening flange of said inner panel, and an outer side wall for the hollow panel-engaging member integral with the strip and extending rearwardly from the said strip and integrally united with the rear wall adjacent said lip, said outer side wall being spaced from the rib a distance greater than the width of the space between the stiffening flanges of the shell and the inner panel, the outer side wall and the rear wall of the panel-engaging member being flexed away from the stiffening flange of the panel in the direction of the stiffening flange of the shell and placing the said side wall and the said rear wall under tension and exerting gripping action upon the said flanges when the breaker strip is between the said flanges.

2,665,590. FLUID COOLING SYSTEM. Albert B. Hubbard, Caldwell, N. J., assignor to General Electric Co., a corporation of New York. Application Sept. 5, 1951, Serial No. 245,711. 5 Claims. (Cl. 62-4)

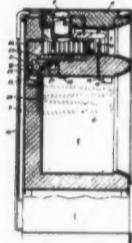
each of the water loop and expansion coil loop for controlling the water flow control valve and the pressure responsive switch, means for carbonating the water in said tank comprising a source of carbon dioxide under pressure, and a conduit adapted to communicate said carbon dioxide to the bottom of said tank and terminating in a horizontal loop having a plurality of discharge ports therein, and carbonated water discharge means comprising a conduit extending adjacent the bottom of said tank and communicating with a discharge valve, said last mentioned conduit having a capillary tube communicating between the interior of said tank and the interior, whereby excess gases may be purged upon opening said valve, and a check valve adjacent the bottom of said conduit whereby water can not run back into said tank upon closing said valve.

2,665,557. LUBRICANT SEPARATING SYSTEM FOR REFRIGERATING MACHINES. Wayne E. Dodson, Caldwell, N. J., assignor to General Electric Co., a corporation of New York. Application Feb. 3, 1951, Serial No. 206,273. 7 Claims. (Cl. 62-3)



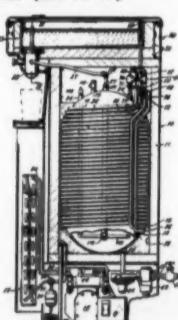
1. A fluid line indicator comprising a refrigerating system comprising a compressor and a condenser and an evaporator connected in a closed refrigerant circuit, a sump for said compressor arranged to hold a body of lubricating oil, means including a chamber in said circuit between the discharge side of said compressor and said condenser for separating oil from the compressed refrigerant flowing to said condenser, a conduit between said chamber and said sump for returning oil to said sump, means for minimizing the flow of gas through said conduit to said sump, a valve in said conduit for controlling the flow of liquid therethrough, and means responsive to a predetermined low temperature of the liquid on the inlet side of said valve for preventing the flow of liquid from said chamber through said conduit.

2,665,558. TWO-TEMPERATURE REFRIGERATION SYSTEM. Marcus E. Fieme, deceased, late of Scotia, N. Y., by Clara E. Fieme, administratrix, Scotia, N. Y., assignor to General Electric Co., a corporation of New York. Application Aug. 23, 1946, Serial No. 692,438. 15 Claims. (Cl. 62-3)



1. Refrigerating apparatus comprising a primary evaporator, a secondary refrigerating system including an evaporating portion and a condensing portion, said condensing portion being in heat exchange relation with said primary evaporator, means providing a control chamber in said secondary refrigerating system between said condensing portion and said evaporating portion, a condensate reservoir in communication with said secondary refrigerating system, and a movable baffle in said control chamber for selectively directing condensate from said condensing portion to said evaporating portion or to said condensate reservoir.

2,665,559. LIQUID TREATING APPARATUS. Fred H. Dexter, Monrovia, Calif. Application July 14, 1950, Serial No. 173,727. 7 Claims. (Cl. 62-4)



1. In a refrigerator construction of the character described, a cabinet, means therein providing an ice compartment, said compartment having foraminous side walls spaced from side walls of the cabinet, a chamber unit below said compartment, said unit having a bottom and side walls, the chamber unit side walls being directed upwardly in a plane passing between the foraminous walls and the cabinet side walls, a baffle wall extending from each of the unit side walls to the top of the cabinet providing inner and outer flues, said inner and outer flues being in communication at the top of the cabinet, a freezing coil in each of the inner flues, means for establishing air communication between the chamber unit and the outer flues, an electrically operated water spray means within the chamber unit, and means for operating said air communication establishing means simultaneously with the operation of the water spray means.

(To Be Continued)

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4-12-54

Home and Farm Freezer Sales by NEMA Firms Hit 794,688 Units for 1953

Summary for December and Year, 1953

Electric Farm and Home Freezers—Complete—Sales by Sizes—Units
Farm and home freezers complete with high and low side and cabinet, where 50% or more of the net cabinet capacity is designed for freezing and/or storage of frozen foods.

DECEMBER (25 Companies)

Sizes	Domestic (48 States and D. C.)	Canadian	Other Foreign	Total
1. Less than 5 cu. ft.				
Chest Models	*	*	*	*
Upright Models	†	†	†	†
2. 5 and 6 cu. ft.				
Chest Models	*319	*	*8	*327
Upright Models	†	†	†	†
3. 7 and 8 cu. ft.				
Chest Models	2,279	20	112	2,411
Upright Models	†	†	†	†
4. 9 and 10 cu. ft.				
Chest Models	3,190	...	60	3,250
Upright Models	1458	†	16	1464
5. 11 and 12 cu. ft.				
Chest Models	2,352	...	104	2,456
Upright Models	4,904	22	95	5,021
6. 12.5 to 17.4 cu. ft.				
Chest Models	9,281	100	72	9,453
Upright Models	3,445	13	48	3,506
7. 17.5 to 21.4 cu. ft.				
Chest Models	3,929	64	21	4,014
Upright Models	3,566	39	1	3,606
8. 21.5 to 30.4 cu. ft.				
Chest Models	836	19	9	864
Upright Models	\$1,293	...	...	\$1,293
9. 30.5 to 40.4 cu. ft.				
Chest Models	...	...	...	...
Upright Models	†	†	†	†
10. 40.5 to 50.4 cu. ft.				
Chest Models	...	...	...	...
Upright Models	...	...	...	...
11. 50.5 to 60.4 cu. ft.				
Chest Models	...	...	...	...
Upright Models	...	...	...	...
12. 60.5 cu. ft. and over				
Chest Models	...	...	...	...
Upright Models	30	...	...	30
Total Chest Models	22,186	208	386	22,775
Total Upright Models	13,696	74	150	13,920
Total All Models	35,882	277	536	36,695

YEAR, 1953 (26-24 Companies)

Sizes	Domestic (48 States and D. C.)	Canadian	Other Foreign	Total
1. Less than 5 cu. ft.				
Chest Models	*	*	*	*
Upright Models	†	†	†	†
2. 5 and 6 cu. ft.				
Chest Models	*10,218	*174	*513	*10,905
Upright Models	†	†	†	†
3. 7 and 8 cu. ft.				
Chest Models	50,731	2,184	2,689	55,604
Upright Models	†	†	†	†
4. 9 and 10 cu. ft.				
Chest Models	41,972	249	1,129	43,350
Upright Models	*18,368	1471	1438	*19,277
5. 11 and 12 cu. ft.				
Chest Models	65,021	3,271	1,416	69,708
Upright Models	75,875	1,938	788	78,601
6. 12.5 to 17.4 cu. ft.				
Chest Models	246,962	8,085	1,377	256,424
Upright Models	54,393	942	728	56,063
7. 17.5 to 21.4 cu. ft.				
Chest Models	112,178	2,572	468	115,218
Upright Models	51,365	803	164	52,332
8. 21.5 to 30.4 cu. ft.				
Chest Models	19,279	488	64	19,831
Upright Models	*17,190	192	*16	*17,298
9. 30.5 to 40.4 cu. ft.				
Chest Models	...	...	...	...
Upright Models	†	†	†	†
10. 40.5 to 50.4 cu. ft.				
Chest Models	...	...	...	...
Upright Models	...	...	...	...
11. 50.5 to 60.4 cu. ft.				
Chest Models	...	...	...	...
Upright Models	33	...	...	33
12. 60.5 cu. ft. and over				
Chest Models	...	...	...	...
Upright Models	44	...	...	44
Total Chest Models	546,361	17,023	7,656	571,040
Total Upright Models	217,268	4,246	2,134	223,648
Total All Models	763,629	21,269	9,790	794,688

*Chest models for items 1 & 2 combined because of possible disclosure of individual company data.

†Upright models for items 1-2-3-4 combined because of possible disclosure of individual company data.

‡Upright models for items 8 & 9 combined because of possible disclosure of individual company data.

Admiral Corp. (In 2-1-53); Appliance & Electronics Div., Avco Mfg. Corp. (Crosley & Bendix Divs.); Ben-Hur Mfg. Co.; Carrier Corp.; Coolerator Co., a Div. of International Tel. & Tel. Corp.; Deepfreeze Appliance Div., Motor Products Corp.; Frigidaire Div., General Motors Corp.; General Electric Co.; Gibson Refrigerator Co.; Hotpoint Co., Div. of General Electric Co.; International Harvester Co.; Kelvinator Div., Nash-Kelvinator Corp.; A. J. Lindemann & Hoverson Co.; Masterfreeze Home Locker Mfg. Co.; Maytag Co.; The Norge Div., Borg-Warner Corp.; Philco Corp., Major Appliance Div.; Quicfrez, Inc. (formerly Sanitary Ref. Co.); Revere, Inc.; Ryan Refrigeration, Inc.; Seeger Refrigerator Co.; Servel, Inc. (In 3-1-53); Victor Products Corp.; Westinghouse Electric Corp.; Wilson Refrigeration, Inc.

Government Contracts

DEPARTMENT OF DEFENSE

Description Quantity Invitation No. Opening Date
District Engineer, Corps of Engineers, U. S. Army, Philadelphia District, 121 N. Broad St., Philadelphia, Pennsylvania. Base supply warehouse with refrigeration storage at GR. Pittsburgh Airport, Pa.

Bureau of Ships, Washington, D. C. Ventilation fans each with Spraghtight Motor and Drip-Proof O. L. and L.V.P. Controller as follows L 1/2 AW5 Tube Axial Fan with Spraghtight Snap Switch.

Vaneaxial Fans Various Sizes and Voltages Total all Sizes. Vaneaxial Fans Non-Magnetic With Dripproof O. L. and L.V.R.E. Controller Various Sizes and Voltages total all sizes.

Centrifugal Fans Various Sizes and Voltages Clockwise and Counter Clockwise operation Total all types and sizes Note: above Fans per spec. Ships. F-1471 Dated 15 Feb. 1954. Fans shall be of a type on the Navy Qualified Product List.

General Stores Supply Office, 700 Robbins Ave., Philadelphia 11, Pennsylvania. Fans, Portable, Axial, Electric Explosion Proof Driving motor, 3,450 r.p.m. Motor, Enclosed and Mounted in Aluminum, Fan housing Having Integral Vanes, Feet, Gaskets and Motor Support Ring, Bushings Spec. 17F 8 Ships.

Base Procurement Division, EWMP, Building 120, Wright-Patterson Air Force Base, Ohio. Requirements for Test Chamber, 1 ea. Air Duct and Drives for Propeller Hub Altitude Test Facility.

Bureau of Aeronautics, Washington, D. C. Temperature Humidity Recorder Set.

District Public Works Office, Third Naval District, Federal Office Building, Room 633-90 Church St., New York 7, New York. Construct concrete block vault—approx. 40 ft. sq. 10 ft. 6 in. high.

double vault door, exhaust fan, wire mesh partitions, refrigerated room approx. 19 ft. sq., cork insulated, concrete construction, cement finish, install Government furnished cooling coil, 2-ton compressor, controls, wire mesh partitions approx. 600 lin. ft., 10 ft. 6 in. high, fluorescent lighting, electrical and miscellaneous work, U. S. Naval Supply Depot, Bayonne, N. J. \$10.00 deposit required for bidding data.

Headquarters, Air Materiel Command, Dayton, Ohio. Sink photographic processing stainless steel, complete with stainless steel pipe back splash panel, frame support, towel bar and temp. control unit with adjustable pressure regulators, thermometer, thermostat, and plumbing fittings.

General Stores Supply Office, 700 Robbins Ave., Philadelphia 11, Pennsylvania. Refrigerators, reach-in, shipboard type, one door, interchangeable for right or left hand opening, complete self contained electrically operated unit, corrosion resisting metal, MIL Spec. MIL R 183A Amend. 1.

Farm and Home Freezer Section

Summary for Year 1953

Sales of Electric Farm and Home Freezers Complete by Distributors to Dealers By States

Reports were received from 20 companies

States Units

Alabama 8,630

Arizona 2,224

Arkansas 6,948

California 18,242

Colorado 7,639

Connecticut 5,614

Delaware 1,258

District of Columbia 4,113

Florida 9,546

Georgia 12,325

Idaho 2,354

Illinois 26,147

Indiana 18,824

Iowa 14,710

Kansas 8,549

Louisiana 12,768

Maryland 1,947

Massachusetts 5,718

Michigan 9,508

Minnesota 19,435

Mississippi 11,452

Missouri 8,263

Montana 18,753

Nebraska 4,251

Nevada 12,524

New Hampshire 978

New Jersey 1,327

New Mexico 11,709

New York 31,810

North Carolina 13,693

North Dakota 4,653

Ohio 34,239

Oklahoma 10,190

Oregon 7,716

Pennsylvania 29,340

Rhode Island 1,285

South Carolina 5,090

South Dakota 4,648

Tennessee 11,281

Texas 32,764

Utah 2,987

Vermont 800

ARI Posts Many Gains in First Year--

(Concluded from Page 1, Col. 5) to further a program of "certification of capacity ratings of room air conditioner systems."

The exact details of this "certification of ratings" program are yet to be worked out, and a committee headed by Malcolm Bard of Chrysler Airtemp was named for this task.

Retiring President McKesson paid tribute to the many committees and committee chairmen who had functioned for the ARI over the past year, and pointed particularly to the smooth manner in which the merger of the two industry associations into ARI had taken place, and pointed out that there are not "two camps, or two groups, or distinctions between large companies and small companies, but that we are united in ARI."

Some Positive Actions

In the managing director's report George Jones covered a wide variety of topics, and the following will only be a summary of some of the more important accomplishments and actions of ARI during the past, and continuing into the current year:

The revised FHA Engineering Bulletin ME-10, covering instructions to FHA field offices on complete home air conditioning systems, is about to be issued. Working with the FHA to put through the revisions which should clear up some problems in the financing of new homes with air conditioning was the Year-Round Residential Air Conditioning Section of ARI.

Work on UL Speed-Up

Conferences with Underwriters' Laboratories have resulted in the speeding-up of approval for new products, particularly of air conditioners.

Through conferences with the committee which is responsible for the National Electric Code, it is probable that room air conditioners will not be classified as "fixed equipment" with the meaning of the Code. The Code limits the full load current of any unit classified as fixed equipment to 50% of the circuit capacity (7½ amperes).

Meetings are being held with public utility companies on the problem of the load imposed on power lines by air conditioning equipment, and it is hoped that some program will be developed for discussion at the industry level.

Export License Activity

By presenting the industry's case to the U. S. Department of Commerce, ARI got bronze body and bronze filled valves off the list of products requiring export licenses.

Also, the size of air conditioners on which licenses are required was raised to those with 24,000 B.t.u. capacity.

Jones promised vigorous action

to try to get the excise tax removed or reduced on room air conditioners, and explained how the room air conditioner came to be left out of the act which reduced the excise tax on major appliances.

Room Conditioner Excise

All expert political opinion had been to the effect that no cuts would be made in excise tax on appliances, and when Sen. Douglas' measure was presented, room air conditioners had been left out through apparent carelessness in drawing up the measure. Because it was necessary to rush the bill through Congress before the old tax measure expired, it was impossible to get any sort of action on an amendment which would have included the room air conditioner.

Jones said that this situation pointed up the need for better "listening posts" in Congress, and closer relations with Capitol Hill.

Relations with other trade groups in the industry have been generally favorable, Jones said in reviewing this phase of the industry's activities. However, he said that on advice of legal counsel it had been necessary to inform the Refrigeration & Air Conditioning Contractors Association (RACCA) that ARI could not participate as an association in any manner with the "Qualified Contractors Program" which RACCA has proposed.

RISAC to Washington

It was also stated that since ARI pays by far the major part of the budget for the Refrigeration Industry Safety Advisory Committee (RISAC) the RISAC headquarters will be moved to Washington, and more active efforts will be undertaken to get municipal and state bodies to adopt the B-9 Safety Code.

Jones urged greater attention by the association to the "promotion" of industry, pointing out that "the general public doesn't understand the scope and breadth of our industry." In conjunction with this, he said that the ARI would be represented on the programs at the Indoor Comfort Conference in Philadelphia May 15, 16, and 17, and at the New York Sales Executives Club Clinic on air conditioning, June 15.

Lud Emde of Temprite Products, who had the difficult task of developing a new dues structure, won approbation for his efforts and got the new dues accepted. Principal change is that above and beyond the basic membership cost, each product section will determine what additional services or activities they wish, and levy their own extra dues assessment for such activity.

Why Industry Show Moves

W. A. Siegfried of Superior Valve & Fittings Co., reporting on the All-Industry Show, confirmed that the Cleveland Show last fall had been the biggest, with 234 exhibitors occupying 64,305 sq. ft. of space and drawing an attendance of 12,230 persons.

The 1955 show will be in Atlantic City, and the 1957 Show in Chicago, he stated, and discussed some of the reasons for moving the Show around, and pointed out that the last time the Show was held in Atlantic City, it drew less people from the immediate surrounding states than did the Show when held in Chicago.

He paid high tribute to George Mills, the Show Director, for his efforts in making the affair the big success that it was.

E. M. Flannery, of Bush Mfg. Co., reporting on the ARI Educational Conferences, said that the recent Conference at Long Beach had attracted 70 exhibitors and an attendance of some 1,500 people from all branches of the industry.

Reaction to the new technical program and Show hours, and par-

ticularly the elimination of the Sunday sessions, was generally favorable, he declared.

Next Conference will be held Nov. 18, 19, and 20 in Minneapolis, the one following that will be in Atlanta, Ga. on April 21, 22, and 23, 1955.

Elected to the board of ARI for the coming year are: W. H. Aubrey, Frick Co.; W. F. Bakke, Sub-Zero Freezer Co., Inc.; F. G. Coggins, Detroit Controls Corp.; A. J. DeFino, Fedders-Quigan Corp.; J. A. Dugan, Bundy Tubing Co.; E. B. Dunphy, Acme Industries, Inc.; James Emmett, Jr., Jas P. Marsh Corp.; C. V. Gary, Henry Valve Co.; Walter A. Grant, Carrier Corp.; B. W. Hanson, Schaefer, Inc.; J. R. Hertzler, York Corp.; H. F. Hildreth, Westinghouse Electric Corp.

R. H. Israel, Virginia Smelting Co.; G. K. Iwashita, General Electric Co.; L. W. Larsen, Tecumseh Products Co.; W. F. Switzer, Frigidaire Div., General Motors Corp.; M. M. Lawler, Worthington Corp.; H. F. Spehrer, Sporlan Valve Co.; and A. O. Vogel, The Vilter Mfg. Co.

Advisory members of the board of directors, made up of some of the past presidents of ACRMA and REMA, are: John Dube, Alco Valve Co.; E. M. Flannery, Bush Mfg. Co.; S. E. Lauer, York Corp.; R. H. Luscombe, Penn Controls, Inc.; A. P. Shanklin, Carrier Corp.; W. A. Siegfried, Superior Valve & Fittings Co.; and K. B. Thorndike, Detroit Controls Corp.

Dr. Mikulas joined Kelvinator in 1936 as chief metallurgist. During the World War II period, 1941 to 1944, he was assistant supervisor of quality at Nash-Kelvinator's aircraft propeller plant in Lansing. He has been assistant chief engineer for Kelvinator since 1949.

A University of Michigan graduate, Dr. Mikulas received his B.S. degree in engineering in 1932, his master's degree in 1933, and completed his Sc. D. work at the university in 1936.

Dr. Philipp has played a leading role in the development of Kelvinator

appliances for the last 26 years. He joined the company as director of Kelvinator research in 1927, after completing post-graduate studies at the University of Michigan. He was named manager of Kelvinator's Detroit plant in 1937, chief engineer of the Kelvinator Div. in 1939, and vice president in 1946.

Dr. Philipp was graduated from the University of Michigan with a B.S. degree in 1921, an M.S. degree in 1922, and a Ph. D. degree in 1925. From 1922 to 1924 he studied under a research fellowship at the University of California.

Utilities Ponder--

(Concluded from Page 1, Col. 4) on such a scale as to dwarf anything of the kind done previously.

Among the other speakers from the refrigeration and air conditioning industry were George Jones, managing director of the Air-Conditioning and Refrigeration Institute; R. I. Bull, commercial sales supervisor of the Ohio Power Co.; P. W. Emler, American Gas & Electric Service Co.; Roger Bolin, advertising manager, Westinghouse Electric Corp.; M. E. Skinner, Union Electric Co.; and George F. Taubeneck, publisher of AIR CONDITIONING & REFRIGERATION NEWS.

Extracts from these talks will appear in a subsequent issue of the NEWS.



DR. WM. MIKULAS



DR. L. A. PHILIPP

Kelvinator Appoints--

(Concluded from Page 1, Col. 2) participated in by Nash-Kelvinator. He will act as a consultant to Altorfer Bros. Co., Peoria, Ill., laundry equipment maker; Ranco, Inc., Columbus, Ohio, producer of heater and refrigeration controls for the automobile and appliance industries; and appliance subsidiaries in Canada and England—as well as to the parent company.

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